

ORDINANCE NO. 97-49

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF PALM BEACH COUNTY, FLORIDA AMENDING THE 1989 COMPREHENSIVE PLAN AS ADOPTED BY ORDINANCE NO. 89-17, AS AMENDED; AMENDING THE TEXT OF THE COASTAL MANAGEMENT ELEMENT (TO REVISE TEXT BASED ON THE FINDINGS OF THE PALM BEACH COUNTY 1996 EVALUATION AND APPRAISAL REPORT - EAR); POTABLE WATER, SANITARY SEWER, STORM WATER MANAGEMENT, & SOLID WASTE SUB-ELEMENTS (TO MERGE INTO A SINGLE UTILITY ELEMENT BASED ON THE EAR); RECREATION AND OPEN SPACE ELEMENT (TO REVISE AND UPDATE BASED ON THE EAR); CONSERVATION ELEMENT, (TO REVISE AND UPDATE BASED ON THE EAR); AND THE COMPREHENSIVE PLAN MAP SERIES (TO REVISE UPDATE, OR DELETE MAPS, BASED ON THE EAR); AND AMENDING ALL ELEMENTS AS NECESSARY; PROVIDING FOR REPEAL OF LAWS IN CONFLICT; PROVIDING FOR SEVERABILITY; PROVIDING FOR INCLUSION IN THE 1989 COMPREHENSIVE PLAN; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, on August 31, 1989, the Palm Beach County Board of County Commissioners adopted the 1989 Comprehensive Plan by Ordinance No. 89-17; and

WHEREAS, the Palm Beach County Board of County Commissioners amends the 1989 Comprehensive Plan as provided by Chapter 163, Part II, Florida Statutes; and

WHEREAS, the Palm Beach County Board of County Commissioners have initiated amendments to several elements of the Comprehensive Plan in order to promote the health, safety and welfare of the public of Palm Beach County; and

WHEREAS, the Palm Beach County Local Planning Agency conducted a public hearing on May 23, June 13, June 20, and October 24, 1997, to review the proposed amendments to the Palm Beach County Comprehensive Plan and made recommendations regarding the proposed amendments to the Palm Beach County Board of County Commissioners pursuant to Chapter 163, Part II, Florida Statutes; and

ORDINANCE NO.

97-49

1 **WHEREAS**, the Palm Beach County Board of County Commissioners,
2 as the governing body of Palm Beach County, conducted a public
3 hearing pursuant to Chapter 163, Part II, Florida Statutes, on July
4 21, 1997, to review the recommendations of the Local Planning
5 Agency, whereupon the Board of County Commissioners authorized
6 transmittal of proposed amendments to the Department of Community
7 Affairs for review and comment pursuant to Chapter 163, Part II,
8 Florida Statutes; and

9 **WHEREAS**, Palm Beach County received on October 20, 1997, the
10 Department of Community Affairs "Objections, Recommendations, and
11 Comments Report," dated October 16, 1997, which was the
12 Department's written review of the proposed Comprehensive Plan
13 amendments; and

14 **WHEREAS**, on November 17, 1997, the Palm Beach County Board of
15 County Commissioners held a public hearing to review the written
16 comments submitted by the Department of Community Affairs and to
17 consider adoption of the amendments; and

18 **WHEREAS**, the Palm Beach County Board of County Commissioners
19 has determined that the amendments as modified satisfy the concerns
20 addressed in the Department of Community Affairs' "Objections,
21 Recommendations and Comments Report" and comply with all
22 requirements of the Local Government Comprehensive Planning and
23 Land Development Regulations Act.

24 **NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY**
25 **COMMISSIONERS OF PALM BEACH COUNTY, FLORIDA, that:**

26 **Part I. Amendments to the 1989 Comprehensive Plan**

27 Amendments based on the findings of the 1996 Palm Beach County
28 Comprehensive Plan Evaluation and Appraisal Report to the following
29 Elements of the 1989 Comprehensive Plan are hereby adopted and are
30 attached to this Ordinance as the following Exhibits:

1 nevertheless be made effective by adoption of a resolution
2 affirming its effective status, a copy of which resolutions shall
3 be sent to the Department of Community Affairs, Bureau of Local
4 Planning, 2740 Centerview Drive, Tallahassee, Florida 32399-2100.

5 APPROVED AND ADOPTED by the Board of County Commissioners of
6 Palm Beach County, on the 17 day of November, 1997.

7 ATTEST:
8 DOROTHY H. WILKEN, Clerk

PALM BEACH COUNTY, FLORIDA,
BY ITS BOARD OF COUNTY COMMISSIONERS

9 Dawn Haverly
10 Deputy Clerk

By [Signature]
Chair



11 APPROVED AS TO FORM AND LEGAL SUFFICIENCY

12 [Signature]
13 COUNTY ATTORNEY

14 Filed with the Department of State on the 21 day
15 of November, 1997.

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ORDINANCE NO.

97-49

EXHIBITS

TABLE OF CONTENTS

A.	Coastal Management Element <i>EAR Based</i> Revisions and updates	A-1
B.	Potable Water, Sanitary Sewer, Storm Water Management, & Solid Waste Sub-elements <i>EAR Based</i> merger into a single Utility Element	B-1
C.	Recreation and Open Space Element <i>EAR Based</i> Revisions and updates	C-1
D.	Conservation Element <i>EAR Based</i> Revisions and updates	D-1
E.	Comprehensive Plan Map Series <i>EAR Based</i> Revisions and updates to the Map Series	E-1

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ORDINANCE NO. 97-49

A. Coastal Management Element, EAR Based revisions, additions, and deletions

1. ~~DELETE OBJECTIVE 3.2 Coordination with the Port of Palm Beach~~

~~Palm Beach County has incorporated the Port of Palm Beach Master Plan (as amended) into its Comprehensive Plan, pursuant to Rule 9J-5.012, F.A.C., and shall seek to achieve consistency and coordination between the Port Master Plan and this Comprehensive Plan. However, by its adoption of the Port Master Plan, the County does not necessarily subscribe to all findings and recommendations contained therein.~~

~~**Policy 3.2-a:** The County shall coordinate with the Port of Palm Beach, the City of Riviera Beach, the City of West Palm Beach, and other governmental entities, to plan for and to resolve problems related to transportation, development and land use, emergency management and natural resources management, including the bypassing of sand at the Lake Worth Inlet. The Intergovernmental Coordination Element shall provide the basis for resolution of disputes related to the incorporation of the Port of Palm Beach Master Plan (as amended) into this Comprehensive Plan, and to resolve several environmental observations and inconsistencies between the Comprehensive Plan and the Port Master Plan (as amended), as identified in the Support Documents.~~

~~**Policy 3.2-b:** The County shall promote and help ensure the orderly development and use of the Port of Palm Beach through the intergovernmental coordination processes identified in the Intergovernmental Coordination Element and environmental review activities of the Department of Environmental Resources Management.~~

~~**Policy 3.2-c:** Palm Beach County shall encourage measures that advance effective coordination of its goals and activities with those of the Port of Palm Beach, and shall investigate such opportunities as present themselves, for increased cooperation between the two entities.~~

2. REVISE INTRODUCTION

~~The purpose of the Coastal Management Element is to provide for the responsible use and management of coastal resources related to development activities, protection of human life, the limitation of public expenditures in areas subject to natural disaster and protection of wildlife and natural habitat. This element is required by Rule 9J-5.012, F.A.C. The data and analysis section of this Element covers existing land uses, the economic base of the coastal area, the effects of future land use on coastal resources, estuarine pollution, beach and dune systems, public access, hurricane evacuation, coastal high-hazard areas and post-disaster redevelopment. The Port of Palm Beach, a deepwater port governed by the Port Commission, prepared the Port of Palm Beach Master Plan (as amended). Pursuant to Rule 9J-5.012 F.A.C., this Master Plan is incorporated in the Coastal Management Element. Data and analysis related to natural resources are provided for the entire County coastline, except for land use-related information, which is provided only for County-owned and coastal parcels in the unincorporated area.~~

A. Purpose

The purpose of the Coastal Management Element is to provide for the responsible use and management of coastal resources related to development activities, protection of human life, the limitation of public expenditures in areas subject to natural disaster and protection of wildlife and natural habitat. This element is required by Rule 9J-5.012, F.A.C. The element focuses on the proper use and management of the County's coastal resources such as beaches and lagoons, which are key to the tourism industry, a major component of the County's economy.

It is the intent of the County to promote the responsible management of the County coastal area. The proper management and use of this area is necessary for the protection of life and property from natural disasters as well as the conservation of natural resources. Through coordination with federal, state, local agencies and municipalities, a renewed commitment to public education and strict enforcement procedures, the coastal area can be protected to

ORDINANCE NO.

97-49

benefit society. The County's Planning, Zoning and Building Department, Department of Environmental Resources Management and the Department of Emergency Management are primarily responsible for guiding implementation of the goals and objectives of this element.

Of the 44.9 miles of ocean shoreline in Palm Beach County, only 3.5 miles are under County jurisdiction. Twenty-three of the thirty-eight municipalities in Palm Beach County border either the Intracoastal Waterway or the Atlantic Ocean. These relatively small unincorporated lands are interspersed between municipalities in the coastal area, with pockets near the Martin County line and around the Jupiter Inlet, in the Jupiter/Juno Beach/Palm Beach Gardens area, as well as small pockets in near Delray Beach and Briny Breezes. Analysis relating to natural resources management is presented for the entire County coastline, though scrutiny of land use-related data is limited to the unincorporated area due to lack of jurisdiction. The emergency management function is countywide.

B. Assessment and Conclusions

* This is a summary of the data and analysis in the *Support Documents*.

The Coastal Management Element was developed from analysis of various factors and conditions affecting the coastal environment. The evaluation included review and analysis of conditions related to existing land uses, the economic base of the coastal area, the effects of future land use on coastal resources, estuarine pollution, beach and dune systems, public access, hurricane evacuation, coastal high-hazard areas and post-disaster redevelopment. This discussion summarizes the major issues and conditions as reflected in the goals, objectives and policies.

1. Environmental Resources Management

Countywide, development has affected coastal natural resources through beach front development, stormwater runoff, destruction of habitats, and dredge and fill projects. Enforcement of existing regulations and the implementation of new regulations as necessary, as well as continuing assessment of conditions and trends are vital to reducing further degradation of coastal resources

The total length of estuarine shoreline in the county is 268 miles of which only 14 miles (5%) is located within unincorporated county. Seagrass and macroalgae coverage of the total submerged area for Lake Worth Lagoon is 2,110 acres (35% of the total area); for the remainder of the estuarine waters there is 270 acres (12% of the total area). Generally the habitat quality of the estuarine ecosystem and beach/dune and nearshore ecosystems is best in the northern end of the county which is consistent with the trend of development to be heaviest in the south. There are 462 acres of natural coastal upland acreage in public ownership and 59 acres in private ownership in the county. This coastal strand community is thought to be the most rapidly disappearing community in Florida.

Estuarine Environment

Palm Beach County has a Wetlands Protection Ordinance (Section 9.4 Unified Land Development Code [ULDC]), which provides for protection and mitigation of wetlands ecosystems in unincorporated areas. This program provides supplemental protection for wetlands not regulated by the Florida Department of Environmental Protection's (FDEP) Environmental Resource Permit Program. A 1994 court ruling sharply limited local wetlands permitting, including eliminating jurisdiction for landscaping activities east of the Coastal Construction Control Line, resulting in increased losses of sea grapes, etc. for views. The County is seeking delegation of enforcement of these activities.

ERM has developed an environmental enhancement program designed to restore estuarine shorelines, improve their productivity and offset the negative effects of development. A vessel registration fee funds projects in freshwater, estuarine and oceanic waters, such as an artificial reef program and estuarine enhancement by restoration of areas with mangroves and seagrass vegetation. The County continues to implement its Environmentally Sensitive Lands

ORDINANCE NO.

97-49

Acquistion Program to identify, prioritize and acquire environmentally sensitive sites within the County, as funding will allow.

South Florida Water Management District (SFWMD) is primarily responsible for controlling stormwater runoff. The County monitors water quality in its estuaries through its own programs and a network of sites and individuals around the County. Continued implementation and expansion of these programs provide valuable information that help identify point and non-point sources of pollution. The County must continue to coordinate with other agencies and municipalities in order to ensure compliance with National Pollution Discharge Elimination System (NPDES) regulations, and particularly with the SFWMD regarding its role in complying with Florida Water Policy (Chapter 62-40, F.S.) and State water quality regulations (Chapter 62-43, F.S.).

The Florida Inland Navigation District (FIND) is responsible for and provides dredge material sites pursuant to 9J-5.006(1)(f)3. ERM coordinates with FIND to manage some of the sites for environmental enhancement purposes and to find suitable beach disposal sites (for beach compatible dredge spoil) to augment the county's shoreline protection efforts.

The Lake Worth Lagoon Management Plan is expected to be completed in 1997, and focuses on acheiving the goals of Surface Water Improvement and Management Act (SWIM), water quality monitoring and environmental enhancement and restoration activities.

The County's development regulations require the protection of native vegetation adjacent to coastal ecosystems to act as a buffer between development and the ecosystem. Further, the Department of Environmental Resources Management (Department of Environmental Resources Management) will offer technical assistance as an incentive for property owners to voluntarily restore and enhance native coastal vegetation. The County will also explore other tools, such as tax incentives, to further encourage voluntary participation in coastal vegetation protection and enhancement.

Manatee protection in County waterways, include State speed zone enforcement, wetlands protection regulations (Florida ERPP and ULDC), County environmental enhancement programs and education. The biggest threat to manatees is motorized boating. Demand for marina slips continues to be high, but a directive issued in 1989 by the Governor and Cabinet prevents approval of new or expanded marinas until a countywide manatee protection plan (MPP), including a boating facility siting plan (BFSP), is adopted. The goal of the BFSP is to identify sites for facilities in a way that will help reduce the number of manatees killed by boats. Until such a plan is adopted countywide, FDEP will only permit new or expanded marina facilities according to the so-called 1:100 policy, which requires "...the construction of new or expanded boating facilities shall be limited to a maximum of one power boat slip per hundred linear feet of shoreline owned or controlled by the applicant." In 1995, a draft Boat Facility Siting Plan for Palm Beach County was prepared, under contract to FDEP, by TCRPC. This plan is currently being technically refined by the DEP with County participation. Once the current draft has been refined to an acceptable technical defensibility, the County will support adoption provided that it is countywide, meaning that it has been adopted by all of the affected municipalities. DEP is responsible for achieving consensus among the various local governments.

In recent years, personal watercraft (such as jet skis) have become very popular and there is concern that the effects of the jet propulsion may also affect submerged resources, such as seagrass, as well as manatees, who feed on seagrass. The County intends to investigate the impacts of personal water craft on seagrasses and manatees. Other programs to protect submerged resouces include education, publication of maps and demarcation via signage, etc., in order to promote awareness and consideration for the protection of those resources.

ORDINANCE NO.

97-49

Nearshore, Shoreline, Beaches and Dunes

The beach/dune and nearshore ecosystem is an integral feature of Palm Beach County and is invaluable in providing important recreational, commercial, environmental and storm protection functions. Very little undeveloped land remains along the County's beaches. The 1,235 coastal acres in public ownership exceeds the State of Florida's minimum guideline. Therefore, with property values continuing to rise for the remaining supply and the public supply already adequate, it is unlikely that any additional acquisitions will be made for recreational use.

In 1985, the Palm Beach Countywide Beaches and Shores Council was created to coordinate the protection, preservation and enhancement of the oceanfront beaches and shores in the County. The Council consists of twenty-six participants, including Palm Beach County, affected municipalities, inlet and special districts, two environmental entities, and the Municipal League of Palm Beach County. The Council advises the Board of County Commissioners and FDEP on projects and/or actions involving any beach or shore located in Palm Beach County on the Atlantic Ocean and seaward of the Coastal Construction Control Line (CCCL). The Council has no permitting authority.

The natural reefs along the coastline of the County extensive and are very popular with diving and fishing enthusiasts. The Artificial Reef Program's primary goal is to enhance marine habitats, which will enhance marine fishery stocks and help alleviate the increased pressure on the natural reef areas by attracting the fishermen and scuba divers to these areas. The program strives to establish diverse habitats and has created more than 30 reefs in both the ocean and the Lake Worth Lagoon. The County supports the management of these additional resources through the establishment of special management zones to protect fish populations and local laws regulating spear fishing.

Changes along the Palm Beach County shoreline can be considered to be a consequence of natural and manmade factors that include storm effects, sea-level rise, inlet/navigation project impacts and shoreline protection structures for the protection of coastal development.

Chapter 161, FS, Rule 62B-33, FAC, and Rule 62B-42, FAC, regulates all development seaward of the established coastal construction control line (CCCL) for the protection of upland properties and the control of beach erosion. The CCCL is established by the State based upon the expected landward limit of erosion from a 100 year return interval storm event and is used to define the landward limit of FDEP jurisdiction. The CCCL has been located 500-750 feet landward of mean-high-tide. In addition, FDEP carries out beach management planning and provides funds for beach nourishment projects.

Thirty-seven percent of the County's shoreline has been armored (seawalls, rip-rap, revetments) for shore protection purposes. Their presence changes the natural ability of the shoreline to respond to storm events by preventing removal of sand from the upland to the littoral zone. This hardening of the shoreline creates a deficit of sand in the littoral zone and displaces the shoreline vegetation that helps reduce erosion. Because of these negative effects, The State recommends armoring as an option of last resort for the protection of major habitable structures and infrastructure. FDEP has classified 21.8 miles of the County's shoreline as critically eroded.

The County's sea turtle protection program remains in place. Gains have been made in the survival rate of turtle hatchlings and mothers returning to nest as a result of the regulations (Sec. 9.1, ULDC). However, the recent elimination of local regulation of dune landscaping has resulted in sea grapes and other vegetation being cut down, allowing landward artificial lighting to attract hatchlings away from the water. Previously discussed efforts to promote coastal vegetation preservation may provide relief. Development of a sea turtle management plan is underway and will bring together previously discussed issues and solutions as well as consider other feasible strategies.

ORDINANCE NO. 97-49

The County promotes dune and beach restoration and enhancement to strengthen the shoreline's natural defense against storms and erosion, and shall coordinate and cooperate with governments, agencies, districts and property owners to continue to promote protection and enhancement activities. The County must continue to seek funding sources and other strategies for equitable cost distribution of enhancement programs.

Inlets

Inlets have produced substantial changes along the shoreline. The interruption of the natural littoral transport of sediments down the coastline, has caused loss of shoreline south of the inlets and gain in the shoreline north of and inside the inlets. To mitigate against the erosive impacts of Inlets, Section 161.161, F.S., requires that responsible agencies prepare inlet management plans, including recommendations regarding inlet sediment bypassing, modifications to channel dredging, jetty design, and beach restoration and nourishment. Cost estimates necessary to take these corrective measures must also be included. Of the four inlets in the County, only the South Lake Worth Inlet does not have a plan written. That inlet's regulating authority was abolished in 1996 and the responsibilities have been assumed by Palm Beach County. The County will draft and implement an inlet management plan for this inlet.

Appropriate coordination with all the affected governments and agencies in the coastal area is necessary for effective coastal protection. The County shall share in the responsibilities and costs of coastal management areas with appropriate governments, districts, and agencies.

2. Coastal Development and Emergency Management

Florida is located in a hurricane-vulnerable area. A number of tropical storms and hurricanes have affected the Palm Beach County area in years past, indicating a need to identify vulnerable areas and establish policies concerning pre-disaster planning and management and post-disaster redevelopment.

In the event of a devastating natural disaster such as a hurricane, the County would rely on a reserve contingency fund that is part of its annual budget, to fund the timely repair and re-establishment of critical or essential facilities in the immediate post-disaster period.

Palm Beach County has full responsibility for coordination of all evacuation procedures during a natural disaster. For this reason, the Palm Beach County Comprehensive Emergency Management Plan is Countywide in scope. The plan establishes official policy for those areas and agencies under the direct control of the Board of County Commissioners and any municipality in Palm Beach County that has not developed and attained approval of its own plan in accordance with Rule 9J-6 and 7, FAC, as authorized by Chapter 252, FS. The Division of Emergency Management (DEM) is the County entity responsible for coordinating evacuation of the population at risk during a hurricane event.

The County has developed the Post-Disaster Redevelopment Plan, in order to provide for the health, safety and welfare of the county through sound pre- and post-disaster redevelopment policies which promote the reduction of loss of life and property. This plan was adopted by the Board of County Commissioners in the June, 1996.

Palm Beach County's Coastal High-Hazard Area (CHHA) is the evacuation area for a Category 1 hurricane. It is expected that the number of structures located within the CHHA will continue increase.

The infrastructure in the coastal area is available at urban levels-of-service and subject to concurrency requirements. Palm Beach County will not promote additional densities in the CHHA that would reduce evacuation times, and will not fund infrastructure improvement or expansion that facilitate density increases beyond current development approvals. New development and infil development or redevelopment shall be consistent with the Future Land Use Atlas densities and adjacent densities.

ORDINANCE NO. 97-49

Redevelopment of coastal or shore protection structures is subject to Section 161.041, Florida Statutes, which authorizes the Florida Department Environmental Protection permit coastal construction or reconstruction of shore protection structures. Redevelopment is also regulated by the Unified Land Development Code and the Building Code.

III. — SUMMARY OF EXISTING AND FUTURE CONDITIONS

This section summarizes existing land uses, the economic base of the coastal area, the effects of future land use on coastal resources, estuarine pollution, beach and dune systems, public access, hurricane evacuation, coastal high-hazard areas and post-disaster redevelopment. Data and analysis related to natural resources are provided for the entire County coastline, except for land use-related information, which is provided only for County-owned and coastal parcels in the unincorporated area.

The Port of Palm Beach, a deepwater port governed by the Port Commission, prepared the Port of Palm Beach Master Plan (amended in 1995 and 1996). Pursuant to Rule 9J-5.012 FAC, this Master Plan is incorporated in the Coastal Management Element. The data and analysis information in the Port of Palm Beach section has been summarized from the Port's Master Plan prepared by Gee & Jenson in July, 1988, and updated by Gee & Jenson in 1995 and 1996. The County cannot attest to the accuracy of the data or the validity of the findings presented here:

(a) — Land use map, conflict analysis, economic base analysis, need for water-dependent and water-related sites:

i — Land Use Analysis —

Twenty-three of the thirty-eight municipalities in Palm Beach County border either the Intracoastal Waterway or the Atlantic Ocean. The unincorporated lands are interspersed between municipalities in the coastal area. Generally, these relatively small unincorporated pockets are: near the Martin County line, around the Jupiter Inlet, along the Jupiter/Juno Beach transition, the Lost Tree Village/Seminole Landing developments and the Briny Breezes/Gulfstream area in South County.

Most of the development occurring in the unincorporated coastal area is residential, with some retail and service uses. (*See Existing Land Use Map*) There are no large-scale infrastructure projects currently scheduled for the coastal area. Countywide development has affected coastal natural resources through beach front development, stormwater runoff, destruction of habitats, and dredge and fill projects. In order to ensure the protection and enhancement of the coastal area, enforcement of existing regulations and the implementation of new regulations are vital. Studies to assess current conditions and monitor trends of improvement or degradation of the coastal area are also necessary.

ii — Economic Base Analysis

The major components of the current economic base of Palm Beach County are manufacturing, tourism, agriculture and the in-migration of retired persons which affects the rising demand for goods and services in many sectors. Employment in retail trade and services continues to grow, with services leading the way. Seasonality affects employment in agriculture, retail trade, and services. The Economic Element details the overall economic base of the County. The major industry in the coastal area is tourism. County owned land along the coast can be summed up as parks and beaches or property that will become parks and/or beaches that attract tourists and County residents. Since the unincorporated coastal area is primarily residential and recreational, its local economic base is focused on supporting the residential and tourist markets with appropriate retail and service trade.

ORDINANCE NO. 97-49

iii — Need for Water-dependent and Water-related Sites

The estimated need for water-dependent development sites, including saltwater beaches, marinas, boat ramps and fishing areas are discussed in the *Public Beach Access Study for Palm Beach County 1991*. According to the study, only 1.97 miles of undeveloped, privately owned land exists along the beach in the County (See Table CM-1). The 1,235 acres along the coast in public ownership exceeds the State of Florida's minimum guideline. Therefore, with property values continuing to rise for the remaining supply and the public supply already adequate, it is unlikely that any additional acquisitions will be made for parks.

Table CM-1
Status of Coastline, 1990

	Length in Miles	Percent of Coastline
Total Length of Coastline	45.00	100.00
Publicly Owned Beach	11.86	26.35
County Beaches	(3.48)	(29.00)
Municipal Beaches	(1.65)	(14.00)
State & Other Beaches	(6.73)	(57.00)
Developed Beachfront	31.17	69.27
Undeveloped & Privately Owned	1.97	4.38

The emphasis in the future will be on improving access by increasing the parking supply wherever possible, as well as exploring other means of providing improved public access opportunities. Palm Beach County Department of Environmental Resources Management (ERM) is purchasing large tracts of land to preserve representative habitats in the County. At least one beach front tract is being considered; limited parking and access will be provided at that site. Acquisition of estuarine wetlands (e.g. Singer Island Seagrasslands) is also being pursued primarily for the purpose of preservation.

Table CM-2
Public Beach Parks, 1991

(North to South Order)* BEACH PARK	JURISDICTION	OCEAN FRONTAGE	TOTAL ACRES	PARKING SPACES
Coral Cove Park	County	2,800	66.8	127
Jup. Inlet Colony Bch.	Jup. Inlet Colony	2,850	6.5	0.00
Jupiter Beach Park	County	1,879	64.5	275
Carlin Park	County	3,390	126.1	537
Diamondhead/Radnor*	County	3,570	153.6	0.00
Jupiter Bluffs	Jupiter	3,140	1.2	242
Ocean Cay*	County	670	13.0	0.00
Juno Beach Co. Park	County	300	6.9	350
Loggerhead Park	County	900	11.0	216
Phil Foster Park	County	0.00	7.1	361
MacArthur Park	State/County	8,300	345.0	500
Ocean Reef Park	County	700	11.0	230
Riviera Public Beach	Riviera Beach	1,050	9.5	490
Palm Beach Shores	Palm Beach Shores	358	4.7	45
Clarke Ave. Beach	Palm Beach	610	4.6	34
Palm Beach Municipal	Palm Beach	2,435	5.6	150
Phipps Ocean Park	Palm Beach	1,200	24.0	292
Kreusler Park	County	500	3.6	152
Lake Worth Munic. Bch.	Lake Worth	1,200	18.6	697
Lantana Munic. Bch.	Lantana	680	8.3	150
S. Lake Worth Inlet Dist (former):	County	400	3.0	124
Ocean Inlet Park	County	590	8.6	126
Ocean Ridge Hammock*	County	1,100	12.0	0.00
Boynton Bch. Oceanfront	Boynton Beach	986	10.0	259
Briny Breezes Beach	Briny Breezes	630	1.4	0.00
Gulfstream County Park	County	600	7.0	87
Delray Public Beach	Delray Beach	6,380	18.7	371
Atlantic Dunes Park	Delray Beach	500	7.0	122
Milani Property*	County	432	5.5	0.00
Spanish River Park	Boca Raton	3,390	81.0	905
Red Reef Park	Boca Raton	3,600	67.1	542
South Beach Park	Boca Raton	2,700	95.0	216
South Inlet Park	County	955	10.9	86

ORDINANCE NO.

97-49

(North to South Order)* BEACH PARK	JURISDICTION	OCEAN FRONTAGE	TOTAL ACRES	PARKING SPACES
TOTAL		58,795.00	1,218.80	7,686.00

* Undeveloped Beach Park properties as of 1991

* Beach Parks are listed via their approximate geographical location that is their north to south order along the Atlantic Coast

Source: Public Beach Access Study for Palm Beach County, 1991

Table CM-3
Public Beach Access Points, 1991

(North To South Order)*	Jurisdiction	Ocean	Total	Parking
Atlantic Blvd. Access	Juno Beach	70.00	1.00	0
Juno Bch (Pier Area)	Juno Beach	150.00	1.80	58.00
Mars Way Access	Juno Beach	15.00	0.60	0
Galaxy Cir. Access	Juno Beach	10.00	0.40	0
Colony Access	Juno Beach	10.00	0.40	0
East Inlet Dr. Access	Palm Beach	25.00	0.05	0
Indian Road Access	Palm Beach	25.00	0.05	0
Arabian Road Access	Palm Beach	25.00	0.05	0
Caribbean Rd. Access	Palm Beach	25.00	0.05	0
Mediterranean Rd. Access	Palm Beach	25.00	0.05	0
Onondaga Ave. Access	Palm Beach	25.00	0.05	0
Reef Road Access	Palm Beach	25.00	0.05	0
Angler Ave. Access	Palm Beach	25.00	0.05	0
Ocean Terrace Parcel	County	50.00	0.15	0
Ocean Terrace Access	Palm Beach	25.00	0.05	0
Osceola Way Parcel	County	50.00	0.15	0
Merrian Road Access	Palm Beach	25.00	0.05	0
Kenlyn Road Access	Palm Beach	25.00	0.05	0
Palmo Way Access	Palm Beach	25.00	0.05	0
La Puerta Way Access	Palm Beach	25.00	0.05	0
El Pueblo Way Access	Palm Beach	25.00	0.05	0
Queens Lane Access	Palm Beach	25.00	0.05	0
Wells Road Access	Palm Beach	40.00	0.10	0
Dunbar St. Access	Palm Beach	25.00	0.05	0
Atlantic Ave. Access	Palm Beach	25.00	0.05	0
Root Trail Access	Palm Beach	25.00	0.05	0
Grace Trail Access	Palm Beach	25.00	0.05	0
S. Ocean Blvd Access	Palm Beach	60.00	0.10	0
Edith St. Access	Ocean Ridge	40.00	1.10	0
Anna St. Access	Ocean Ridge	20.00	0.14	0
Corrine St. Access	Ocean Ridge	20.00	0.14	0
Thompson St. Access	Ocean Ridge	20.00	0.14	0
Porter St. Access	Ocean Ridge	20.00	0.14	0
Fayette Dr. Access	Ocean Ridge	10.00	0.07	0
Hersey Dr. Access	Ocean Ridge	10.00	0.07	0
Beach Way Dr. Access	Ocean Ridge	30.00	0.21	0
Tropical St. Access	Ocean Ridge	25.00	0.12	0
Spanish Riv Blvd Access	Boca Raton	50.00	0.30	48.00
Palmetto Pl. Rd. Access	Boca Raton	300.00	6.70	82.00
Addison Condo. Access	Boca Raton	40.00	1.10	0
So. County Line Access	Boca Raton	30.00	0.40	0
TOTAL		1,545.00	16.28	188.00

* Access points are listed via their approximate geographical location.

Source: Public Beach Access Study for Palm Beach County, 1991

In 1995, countywide boat access to the ICW was provided via 102 marinas with wet slips, and 12 dry storage facilities, with a total of 4,482 wet slips and 2,417 dry racks. Additionally, a survey of private residences with dock space revealed over 6,000 private docks at homes with access to the Intracoastal Waterway. Together, these facilities could accommodate a total of 12,899 boats, about 41.6% of the 31,005 boats registered in Palm Beach County in 1993. An additional thirteen publicly owned saltwater boat ramps provide access to the ICW.

A directive issued in 1989 by the Governor and Cabinet, intended to minimize the impacts of motorized vessels on manatees, prevents Palm Beach County and other affected local governments from approving new or expanded marinas until the impacts of marina development on manatees is studied, and a countywide manatee protection plan, including a

ORDINANCE NO.

97-49

boating facility siting component, is adopted. Until such a plan is adopted, FDEP will permit new or expanded marina facilities according to the so-called 1:100 policy, which requires *"the construction of new or expanded boating facilities shall be limited to a maximum of one power boat slip per hundred linear feet of shoreline owned or controlled by the applicant."* Chapter 163, Florida Statutes, requires local governments participating in adoption of such a plan, to adopt the plan as a part of their Coastal Management Element. In 1995, a draft *Boat Facility Siting Plan for Palm Beach County* was prepared, under contract to FDEP, by Treasure Coast Regional Planning Commission. The goal of the study is to identify sites for boat facilities in a way that will help reduce the number of manatees killed by boats.

The plan evaluated 174 sites (123 existing and 51 potential) throughout the County, to determine whether the sites could be considered for the expansion or development of additional boat facilities. In unincorporated Palm Beach County (which includes 14 miles or 5% of estuarine shoreline), there are 10 existing marinas and 10 potential marina sites (or 20% of the 51 potential sites identified in the study). These sites were evaluated for potential impacts to manatees so that future land use decisions could be made to ensure that the majority of future boat facilities provide a higher level of protection to this endangered species.

The plan identified a paradox that complicates the siting of boat facilities. Areas where there was a low probability of impact to manatees (near inlets and where waterways are wide) usually have extensive seagrass beds. Expansion or construction of new boat facilities in areas of low probability for manatee impacts would cause impacts to seagrasses, the manatees primary food source. The plan suggests that it may be necessary to tolerate limited impacts to seagrasses to 1) achieve the plan's goal of siting boat facilities in areas with low impacts to manatees; 2) meet the future demand for boat facilities; and, 3) enhance the economic development of coastal communities.

FDEP and ERM met to discuss the marina siting plan developed by Treasure Coast Regional Planning Council and both agencies share concerns about some of the recommendations. The main issue is the need for more detailed analysis of environmental impacts and an analysis of land use feasibility at the potential marina sites. FDEP and ERM are particularly concerned about policies that suggest that the County establish a seagrass mitigation banking, which has a poor success record. A more thorough review of the land use compatibility of the proposal is also needed since it is likely that many unincorporated sites have significant development constraints. It is intended that FDEP, ERM, and PZB will attain consensus on these issues before a plan can be adopted and implemented.

The Port of Palm Beach is located principally within the boundaries of the City of Riviera Beach. The need for intensification of development and expansion is addressed in the Port of Palm Beach Master Plan (as amended).

Palm Beach County's Riviera Electrical Power Plant is located in the City of Riviera Beach, adjacent to the Port. Future energy needs in Palm Beach County will certainly increase as population increases. Readily available water for cooling purposes is a vital factor in selecting a site for a power plant. However, in its "Ten-Year Power Plant Plan", the Florida Power and Light indicates that it does not plan to construct any additional coastal plants in Palm Beach County.

There are no areas in need of redevelopment in the unincorporated coastal area. For more information on redevelopment areas in Palm Beach County, see the Housing Element.

(b) — Impact of land uses on natural resources

The vegetative cover, wildlife habitat and reef map series show the vegetative cover (including wetlands), wildlife habitats, and living marine resources. Seagrasses, nearshore reefs and mangroves are depicted for the entire County Coastal area. The Coastal Area Floodplain Map show the areas subject to coastal flooding for the unincorporated county only.

Palm Beach County conducted two studies to assess estuarine systems in 1990 and 1992. Shoreline characteristics of the estuarine shoreline of Lake Worth Lagoon and the remainder of the estuarine waters (Intracoastal Waterway, Loxahatchee River, Eairnan River, etc.) are

depicted in Table CM-4. The total length of estuarine shoreline in the county is 268 miles of which only 14 miles (5%) is located within unincorporated county. Seagrass and macroalgae coverage of the total submerged area for Lake Worth Lagoon is 2,110 acres (35% of the total area); for the remainder of the estuarine waters there is 270 acres (12% of the total area).

Table CM-4
Estuarine Shoreline Characteristics

SHORELINE TYPE	LINEAR MILES		% OF SHORELINE	
	Lake Worth Lagoon	Other (ICW, Lox-River, etc)	Lake Worth Lagoon	Other (ICW, Lox-River, etc)
Water Body	55.3	105.3	60	59.4
Bulkhead w/ Rip-Rap	4.1	11.9	4.5	6.7
Natural Shoreline (unvegetated)	6.2	16.6	9	9.4
Rock	0.6	-	0.5	-
Rip-Rap Revetment	3.5	8.2	4	4.6
Exotic Vegetation	2.5	9.6	3	5.4
Mangrove	17.3	33.6	19	19
TOTALS	91.5	177.3	100	100

Sources: ~~Lake Worth Lagoon Natural Resources Inventory and Resource Enhancement Study, Dames and Moore, December 1990~~
~~Estuarine Natural Resources Inventory and Resource Enhancement Study, PBCERM, March, 1992.~~

The Atlantic Ocean shoreline of the County is 44.9 miles long, of which 37% has been armored for shore protection purposes. The amount of ocean shoreline within unincorporated Palm Beach County is 3.5 miles or 7.7% of the total. The Florida Department of Environmental Protection has classified 21.8 miles of the shoreline as critically eroded.

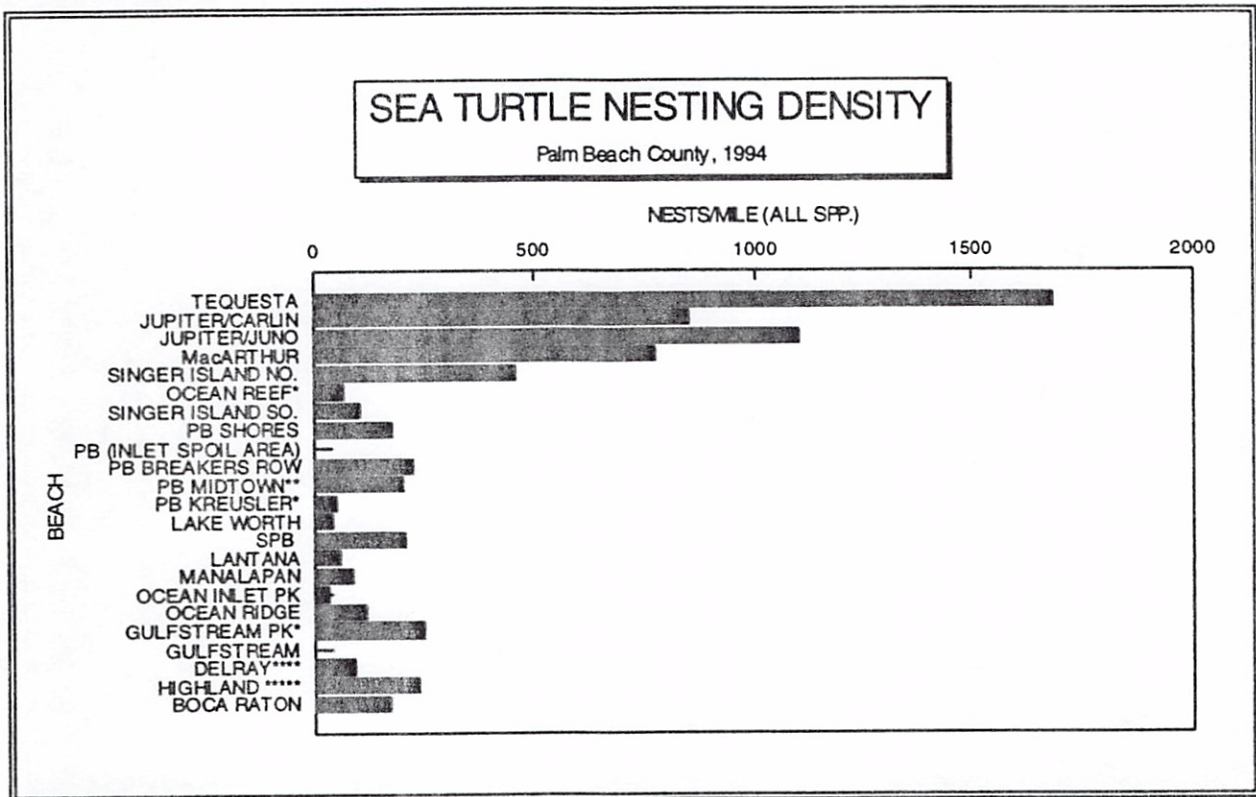
Generally the habitat quality of the estuarine ecosystem and beach/dune and nearshore ecosystems is best in the northern end of the county which is consistent with the trend of development to be heaviest in the south. Some notable exceptions would be the high quality seagrass beds and the better estuarine water quality in the vicinity of all four inlets and the large tract of native habitats associated with the John D. MacArthur State Park. Two other examples of relatively high quality upland coastal habitat exist at Ocean Hammock Park in Ocean Ridge and Gumbo Limbo Nature Center/Red Reef Park in Boca Raton. Another exception to the trend of improved habitat quality in the north county is the degraded nearshore water quality which is localized in the area of the inlets on outgoing tides.

The Florida Natural Areas Inventory (FNAI) determined that there is 462 acres of natural coastal upland acreage in public ownership and 59 acres in private ownership in the county. FNAI states that the coastal strand community is probably the most rapidly disappearing community in Florida.

Sea turtles are particularly dependent on this community for their survival since the beaches are important nesting habitat for 2 endangered (green, leatherback) and 1 threatened species (loggerhead). In 1994, Palm Beach County had the second highest nest counts for loggerheads (12,606) and greens (936) and the highest nest counts for leatherbacks (129) in Florida and the continental United States. Within the county, nesting is much higher from Singer Island northward. Figure CM-1, below depicts nesting density in 1994 for all three species for beaches where nesting surveys occur.

ORDINANCE NO. 97-49

Figure CM-1



At build-out the unincorporated coastal areas will have primarily residential (low to high density) and recreational land use. Development and redevelopment of the unincorporated coastal area will result in increased impacts to primarily beach/dune habitats with lesser effects on the nearshore and estuarine ecosystems. Efforts to provide storm protection may result in measures such as beach nourishment or shoreline armoring which can degrade the beach/dune and nearshore ecosystems. Increased degradation of coastal vegetation (particularly woody species such as seagrapes and mangroves) can be expected as coastal property owners demand waterfront views and to provide for storm protection. Continued coastal development will affect endangered species (particularly sea turtles, birds, manatees and coastal/estuarine plants) via degradation of critical habitats and water quality. For example, the majority of the unincorporated coastal areas are located in northern Palm Beach County where sea turtle nesting density is among the highest in the United States. Any loss of beach nesting habitat or increases in coastal light levels can have a significant impact on local turtle populations.

As discussed below, in the Estuarine Systems Section, Palm Beach County will continue to experience increases in development in the coastal urban area with a slight decrease in the extent of agricultural area. The associated increase in impervious surface area and stormwater runoff volumes will have a detrimental effect on estuarine and nearshore water quality and the associated ecosystems. Therefore, land-use generated non-point pollution sources represent the major threat to estuarine water quality on a countywide basis. Water quality will be affected by an increase in suspended solids, BOD, nutrients, heavy metals and other pollutants. The unincorporated coastal areas that are adjacent to estuarine waters are limited to the north county area which is where the majority of the mangroves occur in the county. As residential development continues in this area, the primary impacts will be loss of upland/estuarine transitional habitats resulting in development immediately adjacent to a highly productive mangrove fringe/forest. Degradation from construction impacts and widespread hedging of mangrove trees will reduce productivity. Strong Federal, state or local regulatory programs and a commitment to educating the public regarding the benefits and values of these resources are recommended.

(c) Impact of development on historic resources

ORDINANCE NO.

97-49

The majority of historic or potentially historic sites in Palm Beach County are located within municipalities. In 1990, the Historic Preservation Board of Palm Beach County conducted a survey of the unincorporated areas of Palm Beach County, revealing over 300 structures of some historic significance. Within the unincorporated coastal area, there were 16 structures identified by the survey, all in the Jupiter Inlet/Loxahatchee River area. Most of these buildings were constructed during the mid to the late 1930s. However, six were identified from earlier periods, including one from the late nineteenth century and another constructed prior to 1920. The most significant house is the DuBois House, located on the south side of the inlet. This structure is listed on the National Register of Historic Places, is in a County Park (and therefore publicly owned), and is situated on an archaeologically significant shell midden, attributed to a prehistoric period. Additionally, a number of sites of archaeological significance are identified in the Florida Site File; 59 of 79 identified sites are located in the coastal area. Again, these are mainly located in municipalities. Three are located along the coast in unincorporated areas, one of which is the DuBois site; three are along the various tributaries of the Loxahatchee River, and two are located within a residential development, approximately six miles south of the inlet. As in these last two, most archaeological sites identified are in developed areas (*Short-Term Archaeological Survey*).

In addition to the historic resources located on uplands as described above, there are also a number of shipwrecks of historic significance located in the nearshore and offshore waters of the County. Shoreline protection projects such as beach nourishment have the potential to impact these resources. State and Federal laws require these resources be identified, and avoided during construction of beach nourishment projects.

In response to development pressures threatening historic resources, the County adopted archeological and historic resource protection provisions as part of the Unified Land Development Code. Subsequently, Palm Beach County has been designated a Certified Local Government by the State of Florida and the U.S. Department of Interior. For additional information, see the Future Land Use and Recreations and Open Space Elements.

(d) Estuarine ecosystem

Seagrasses, mangroves, *Spartina* spp., oyster bars, and mud flats are important components of Palm Beach County's estuarine system. All are vital to fisheries because they provide nursery grounds and food and shelter for immature stages of fish and shellfish.

Mangroves, *Spartina* spp. and seagrasses are also important in the prevention of shoreline erosion and the stabilization of sediments. These salt-tolerant plants also provide uptake of excess nutrients and other pollutants and help maintain good water quality.

The Loxahatchee River, the northeastern portion of Lake Worth Lagoon, and portions of shoreline along Palm Beach, Ocean Ridge, Boynton Beach, Highland Beach and Boca Raton continue to have a significant quantity of natural estuarine resources. Discharges from freshwater canals and coastal development, however, have caused a significant reduction of these resources throughout the County. Recently, development in the northern portion of the County has reduced water quality significantly, resulting in the loss of seagrasses in the western portion of the Loxahatchee River.

Due to the sensitive nature of this diverse ecosystem, the discharge of nutrient-laden water from the freshwater canals into the estuaries and through the inlets has been and will continue to be a threat to the reefs.

The surface water system in Palm Beach County is presently comprised of six major freshwater canals with outfalls that discharge stormwater and drainage runoff into the estuarine systems of the Intracoastal Waterway, Loxahatchee River and Lake Worth Lagoon. The C-51 Canal is the major outfall canal into Lake Worth Lagoon. A total of 381 stormwater discharge pipes were identified along the Lake Worth Lagoon shoreline during a 1990 survey.

Urban drainage, stormwater drainage and agricultural runoff carry high levels of nutrients and other pollutants into the canals, which in turn affect the water quality in Lake Worth, the

ORDINANCE NO.

97-49

Intracoastal Waterway and the Loxahatchee River Estuary. Urban stormwater runoff also enters the estuarine waters through direct discharge from some urbanized areas adjacent to Lake Worth and the ICW that are drained by curb and gutter systems.

The 1987 Palm Beach County Public Health Unit (PBCIU) Report indicated that agricultural area canals have poor water quality due to runoff carrying nutrients and debris. This pollution causes low dissolved oxygen, high conductivity, pesticides and fish kill problems. Urban area canals have fair water quality heavily influenced by stormwater runoff, which carries a wide range of pollutants.

The construction of package sewage treatment plants is discouraged in Palm Beach County. The number of plants that discharge to estuarine surface waters has been decreasing in the County; the intent is to eventually phase them out. Where other alternatives are not feasible, construction of such plants will be allowed if they are properly designed and meet all requirements. It is expected that some construction of these plants will occur in those areas where sewage connection is not possible, particularly in the western portion of the County.

There are no infrastructure construction projects currently planned adjacent to the County's coastal area that might alter the circulation patterns, foster accumulation of contaminants in sediments or have a significant impact on the water quality of the estuaries.

The major problems affecting Palm Beach County waters are due to urban and agricultural runoff, poorly flushed finger canals, large freshwater discharges from major canals, the development of vertical bulkheads and shoreline vegetation destruction. To decrease the movement of potential pollutants into surface waters, best management practices need to be implemented and regulations strengthened to significantly increase on-site retention/detention and other pollution-abating techniques.

PBCERM has developed an environmental enhancement program designed to restore estuarine shorelines, improve their productivity and offset the negative effects of development. A vessel registration fee funds environmental enhancement projects in freshwater, estuarine and oceanic waters. The program focuses on an artificial reef program, estuarine enhancement by restoration of areas with mangroves and spartina vegetation, an urban lake management project to focus on freshwater lakes to restore and enhance lake shoreline vegetation and habitat.

The designation and implementation of additional pollution-abatement practices should be evaluated and implemented where feasible. Toward that goal, a management plan is being developed for the Lake Worth Lagoon which will make recommendations for methods to improve the environment of the lagoon and guide the county, municipalities, South Florida Water Management District and other agencies in the implementation of best management practices.

The proposed stormwater treatment area in the Western C-51 Basin (which is a result of the Everglades Forever Act) should improve estuarine water quality, through reduced stormwater discharge to the estuary from western Palm Beach County agricultural areas. Future improvements in estuarine water quality may also be possible through the EPA National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. A Final NPDES permit for the operation of municipal and County storm sewers should be issued in the near future to the County, Municipalities and Special Districts which operate storm sewers. The permit requires the implementation of management plans to improve the quality of stormwater discharged to waters of the county, through the prohibition of non-stormwater discharges and various other non-point source water pollution abatement measures.

South Florida Water Management District (SFWMD) is primarily responsible for controlling stormwater runoff. The proposed redesign of the western C-51 canal basin should improve estuarine water quality. The Upper East Coast Water Supply Plan is a multi-agency effort designed to attempt to balance water supply requirements for urban areas, agriculture and the environment. The implementation of the plan will have far reaching effects on estuarine water quality.

ORDINANCE NO.

97-49

Areas currently drained by curb and gutter systems are mostly within municipal boundaries. PBCHU governs septic tank systems in the County via Environmental Control Rule 1, and provides additional surface and groundwater protection. New septic tanks will not be allowed in areas where there is a nearby sewer connection, and existing septic tanks will be gradually phased out.

Boating activity can also affect estuarine ecosystems due to petrochemical discharges, disturbance to shallow, submerged resources from increased turbidity or propeller damage and impacts to manatees (direct and indirect). Aerial observations show large numbers of prop scars in sea grass beds, particularly in the vicinity of marinas and boat ramps. In recent years, personal watercraft (such as jet skis) have become very popular and there is concern that the effects of the jet propulsion may also affect submerged resources. There is also concern that manatees may be disturbed by jet skis and other fast moving shallow draft vessels when they are operated in sea grass beds and other areas where manatees may feed, rest, or travel forcing the animals to less desirable locations that may expose them to other risks.

(e) Natural disaster planning

i—Coastal High-Hazard Areas and Post-Disaster Redevelopment

Florida is located in a hurricane-vulnerable area. A number of tropical storms and hurricanes have affected the Palm Beach County area in years past, indicating a need to identify vulnerable areas and establish policies concerning post-disaster redevelopment.

Palm Beach County Coastal High-Hazard Areas include Federal Emergency Management Agency (FEMA) V (Velocity) zones and the areas seaward of the CCCL. It is expected that the number of structures located within the coastal high-hazard area will increase. Currently, most existing land uses in the unincorporated coastal areas are residential and recreational.

Redevelopment of coastal or shore protection structures is subject to Section 161.041, Florida Statutes. This section authorizes the Florida Department Environmental Protection to issue permits for coastal construction or reconstruction of shore protection structures. Redevelopment is also regulated by the Unified Land Development Code and the Building Code.

The County has developed the *Post-Disaster Redevelopment Plan*, in order to provide for the health, safety and welfare of the county through sound pre- and post-disaster redevelopment policies which promote the reduction of loss of life and property. This plan was adopted by the Board of County Commissioners in the June, 1996.

In the event of a devastating natural disaster such as a hurricane, the County would rely on a reserve contingency fund that is part of its annual budget, to fund the timely repair and re-establishment of critical or essential facilities in the immediate post-disaster period.

ii—Hurricane Evacuation

Palm Beach County has full responsibility for coordination of all evacuation procedures during a natural disaster. For this reason, the *Palm Beach County Comprehensive Emergency Management Plan* is Countywide in scope. The plan establishes official policy for those areas and agencies under the direct control of the Board of County Commissioners and any municipality in Palm Beach County that has not developed and attained approval of its own plan in accordance with Rule 9J-6 and 7, FAC, as authorized by Chapter 252, FS. The Division of Emergency Management (DEM) is the County entity responsible for coordinating evacuation of the population at risk during a hurricane event.

Palm Beach County has a history of major hurricanes that have damaged property and caused numerous deaths and injuries. The entire geographic area of the County is subject to the destructive force of hurricane winds. Many areas of the County are also subject to flooding or pooling of water caused by hurricane-associated rainfall and storm surge in the coastal area.

ORDINANCE NO. 97-49

The County is divided into fifty-four traffic evacuation zones in order to provide an organized system for the identification of high-risk areas as shown on the following map. Zones one through eighteen are surge-vulnerable areas for a hurricane of any intensity. Zones nineteen through twenty-three are considered surge-vulnerable only in a Category 4 or 5 hurricane.

A Memorandum of Understanding exists between the State of Florida and the American Red Cross regarding hurricane shelters. The American Red Cross assumes the responsibility for opening and staffing all shelters required to provide refuge for those who must evacuate during a hurricane event. The County currently has a shelter deficit of 6,050 spaces, caused by facilities which are not adequately protected for use during a hurricane event. The DEM has filed an application with the Florida Department of Community Affairs for 4.4 million dollars for the retrofit of existing facilities, which cannot be used as hurricane shelters because of unprotected openings. Progress in this retrofit program is contingent upon the availability of state appropriated funds, annually. DEM will continue to file these applications until the deficit is eliminated.

In order to provide for the safety of the general public during a hurricane event, the County will provide evacuation routes and shelter spaces to meet the current state standards of an evacuation time standard of from eight to sixteen hours depending upon population at risk relative to storm intensity, and a shelter space standard of 20 square feet per person. In an effort to protect life and property and to reduce evacuation times, the County shall continue to monitor vegetative growth that may contribute to hazardous tree-fall conditions along identified hurricane evacuation routes that are County-owned or County-maintained. Specific activities which will be implemented to reduce or maintain evacuation time include: a) timeliness of evacuation orders; b) maintaining draw bridges in down position to allow traffic flow; c) alleviating payment of toll charges on the Florida Turnpike; and d) mobilizing utility and maintenance vehicles for the removal of debris or disabled vehicles. The County shall maintain its *Comprehensive Emergency Management Plan* on an on-going basis.

(f) Beach/Dune and Nearshore Ecosystems

There are 44.9 miles of ocean shoreline in Palm Beach County, with 56 public saltwater beach areas that account for 12.1 miles of the shoreline. Palm Beach County has land use authority over the unincorporated shoreline which is only 3.5 miles or 7.7% of the entire shoreline. The beach/dune and nearshore ecosystem is an integral feature of Palm Beach County and is invaluable in providing important recreational, commercial, environmental and storm protection functions.

Much of Palm Beach County is located on a high-energy shoreline and is comprised mainly of sand underlain by consolidated hardbottom which outcrops in the intertidal, nearshore and offshore zones. The net direction of sand is toward the south as a result of wind and wave induced currents.

The beach and dune comprise an important habitat type located along the ocean coast. Coastal vegetation found here can be generally classified into four communities which grade into one another from the shore toward the west. The communities are the herbaceous beach dune community, the shrubby coastal strand community, the forested maritime (or tropical) hammock community and the scrub community. The beach dune community is dominated by sea oats and other grasses, vines and herbs. The coastal strand is dominated by sea grape and saw palmetto while the hammock community is characterized by gumbo limbo, mastic and cabbage palm. Occurrences of the scrub community in the coastal area in Palm Beach County is limited to Jupiter/Juno area and is characterized by the presence of saw palmetto, sand live oak, myrtle oak and a lack of tropical species. Much of the coastal vegetation communities have been degraded by development, exotic plant invasion, erosion and poor management practices such as improper irrigation, fertilization and pruning. The PBCERM Shoreline Protection Program is actively restoring and enhancing dunes and providing technical assistance to property owners to offset the negative effects of development.

Typical mammals found in these communities include raccoon, gray fox, spotted skunk and opossum. Birds utilizing the beach/dune habitat include Eastern brown pelican, least tern,

ORDINANCE NO.

97-49

common tern, ruddy turnstone, sanderling, willet, plovers, gulls, osprey, fish crow and various migratory song birds. Reptiles include loggerhead, green and leatherback sea turtles and the gopher tortoise in scrub areas.

The beaches of Palm Beach County provide important nesting habitat to at least three species of Federally protected sea turtles: Loggerhead (Threatened), Green (Endangered) and Leatherback (Endangered) Turtles. At least 15,000 sea turtle nests are laid on County beaches annually, with the majority of the nesting activity occurring from Singer Island northward. Nesting density in the County can exceed over 1,000 nests per mile in the Jupiter/Juno Beach area with a nesting density of roughly 100 to 300 nests per mile of the remainder of the County.

The natural reefs along the coastline of the County can be divided into three general categories: (1) the nearshore reefs that occur along the beaches to a depth of approximately 15 feet; (2) the patch reefs or the middle reef system that occurs between depths of 15 and 50 feet; and the deep reefs that begin approximately at a depth of 50 feet and continue eastward to the continental slope.

The nearshore reefs, generally low-relief outcrops consisting of Anastasia rock, provide attachment places for algae, sponges, hydroids and several species of hard corals. The habitat quality of the nearshore reefs can be variable depending upon duration of reef exposure, the degree of relief and the areal extent. They provide important habitat and a food source for larval juvenile and adult species of fish and invertebrates. The middle and deep reefs consist of many species of soft and hard corals as well as algae and sponges. Because of proximity of the Gulf Stream to the shoreline and reef formations, the water quality is excellent and the species diversity and habitat are exceptional.

The County has had an Artificial Reef Program since 1985 whose primary goal is to enhance marine habitats, which will enhance marine fishery stocks and help alleviate the increased pressure on the natural reef areas by attracting the fishermen and scuba divers to these areas. The program is guided by the Artificial Reef and Estuarine Enhancement Committee. The program strives to establish diverse habitats and has created more than 30 reefs in both the ocean and the Lake Worth Lagoon. The County supports the management of these additional resources through the establishment of special management zones to protect fish populations and local laws regulating spear fishing.

Changes along the Palm Beach County shoreline can be considered to be a consequence of natural and manmade factors that include storm effects, sea-level rise, inlet/navigation project impacts and shoreline protection structures for the protection of coastal development.

Inlets have produced substantial changes along the shoreline. The interruption of the natural littoral transport of sediments down the coastline, has caused loss of shoreline south of the inlets and gain in the shoreline north of and inside the inlets. To mitigate against the erosive impacts of Inlets, in 1987 the Florida Legislature amended the provisions of Section 161.161, F.S., to require those agencies responsible for inlet management to prepare inlet management plans. These plans are to include recommendations regarding inlet sediment bypassing, modifications to channel dredging, jetty design, and beach restoration and nourishment. Cost estimates necessary to take these corrective measures are also included. Inlet management plans have been written for Jupiter Inlet, Lake Worth Inlet and Boca Raton Inlet and are in the FDEP approval process and some implementation has already been undertaken. The plans identify the sand budget, the physical processes which control the inlets and provide recommendations for mitigating the erosive effects of the inlets on neighboring beaches. The South Lake Worth Inlet District was abolished in 1996 and the responsibilities have been assumed by Palm Beach County. The county intends to proceed with drafting and implementing an inlet management plan for this inlet as well.

Seawalls and revetments have been constructed on approximately 33 percent of the shoreline to protect buildings and infrastructure investments. Their presence changes the natural ability of the shoreline to respond to storm events by preventing removal of sand from the upland to the littoral zone. This hardening of the shoreline creates a deficit of sand in the littoral zone

ORDINANCE NO.

97-49

and displaces the shoreline vegetation that helps reduce erosion. Because of the negative effects of shoreline hardening or armoring, the State has recommended that it be considered an option of last resort for the protection of major habitable structures and infrastructure such as roads.

The average horizontal shoreline recession rate is approximately 0.5 feet per year. The displacement of sediments from the upland to the nearshore littoral zone produced during major storms is a temporary loss to the beach system and a potentially permanent loss to the dune system. However, some of the displaced material is lost to offshore and/or adjacent tidal inlets, consequently resulting in a net loss of sediment to the system.

Efforts to reduce the effects of erosion in the County include beach nourishment projects, construction of seawalls and installation of groins, rocks and revetments. Current and future efforts will focus on improving sand transfer capabilities at inlets, protection of dune vegetation and beach dune nourishment projects. Areas that have received sand as a result of inlet and sand trap dredging include the beaches south of Lake Worth Inlet, South Lake Worth Inlet (Boynton Inlet), Jupiter Inlet, and Boca Raton Inlet.

The FDEP in its *Comprehensive Beach Management Plan*, included six future beach nourishment projects in Palm Beach County for a total of \$35.7 million and four feeder beach projects. The proposed beach nourishment projects are located in the municipalities of Boca Raton, Delray Beach, Palm Beach, South Palm Beach, Ocean Ridge and the Jupiter/Tequesta area. The proposed feeder beach projects are located in at South Lake Worth Inlet, Lake Worth Inlet, Jupiter Inlet and Boca Raton Inlet. Federal, state and local funds are proposed to be used to carry out the projects.

Palm Beach County Department of Environmental Resources Management (PBCERM) used the State's Beach Management Plan as a template for implementing shoreline protection measures in the county. The United States Corps of Engineers recently completed a regional study of coastal erosion in which recommendations were made for proposed projects in Palm Beach (Coast of Florida Erosion and Storm Effects Study-Region III with Final Environmental Impact Statement, October 1996.) A 30 year plan was developed in 1996 which modifies the State plan based upon local considerations and the study recommendations to provide the blueprint for long term planning for the county Shoreline Protection Program. PBCERM's goal is to protect, enhance and manage the coastal zone using sound management techniques. The current capital improvement budget for fiscal years 1997-2002 includes funding for twenty-one (21) shore protection projects in the county at a cost of roughly \$26 million. Federal, state and local funds are being used to carry out the projects. These projects are necessary to reduce storm damage, provide recreational resources and protect important environmental communities.

Beach and dune systems in Palm Beach County are protected at the federal, state and local levels. Agencies involved in the protection of coastal resources and enforcing coastal laws include the U.S. Army Corps of Engineers, FDEP, and Palm Beach County ERM.

Chapter 161, FS, Rule 62B-33, FAC, and Rule 62B-42, FAC, regulate all development seaward of the established coastal construction control line (CCCL) for the protection of upland properties and the control of beach erosion. The CCCL is established by the State based upon the expected landward limit of erosion from a 100 year return interval storm event and is used to define the landward limit of FDEP jurisdiction. The 1985 amendment to Chapter 161, FS, established the 30-year erosion line which prohibits construction of any structure that will be seaward of the local seasonal highwater line within 30 years after the date of application. In addition, FDEP carries out beach management planning and provides funds for beach nourishment projects.

At the local level, Palm Beach County has passed five ordinances which protect coastal resources in the County. Ordinance 86-14 adopted the coastal construction code which regulates the design and structural integrity of coastal construction. Ordinance 82-25 (amending ordinance 79-1) addresses unincorporated areas of special, flood hazard and establishes permitting requirements and construction standards. Ordinance 72-12 (and 78-28

ORDINANCE NO. 97-49

amendments), known as the Dune Ordinance, establishes a coastal construction control line for incorporated and unincorporated areas in which no construction shall occur seaward of a line 25 feet landward from the dune crest. Palm Beach County Ordinance 87-13, known as the Sea Turtle Protection Ordinance, protects sea turtles and their nesting habitats. In 1992, these ordinances were updated and combined into Section 9.1, Coastal Protection Ordinance for inclusion in the Palm Beach County Unified Land Development Code (ULDC). This ordinance was more stringent than State regulations in an effort to provide more protection to rapidly disappearing natural resources.

In 1994, implementation of the Coastal Protection Ordinance seaward of the Coastal Construction Control Line was suspended as a result of a lawsuit. The court determined that local governments were prohibited from regulating landscaping activities east of the CCCL unless such authority had been delegated from FDEP. The county ordinance was revised in 1996 to eliminate jurisdiction east of the CCCL and is now titled Section 9.1, Sea Turtle Protection and Sand Preservation. This action removed most protection of coastal vegetation and has resulted in extensive cutting of sea grapes and other woody coastal vegetation for the purposes of providing a view from beachfront buildings. The county will be exploring the possibility of providing tax incentives to coastal property owners that protect or restore dune vegetation such as sea grapes in an effort to take a more pro-active approach to protect key coastal habitats.

In 1985, the Palm Beach Countywide Beaches and Shores Council was created to coordinate the protection, preservation and enhancement of the oceanfront beaches and shores in the County. The Council consists of twenty-six participants, including Palm Beach County, inlet and special districts, two environmental entities, affected coastal municipalities and the Municipal League of Palm Beach County. The Council considers all projects and/or actions involving any beach or shore located in Palm Beach County on the Atlantic Ocean and seaward of the Coastal Construction Control Line (CCCL). The Council does not have permit authority over projects but serves as an information clearinghouse and advises the Board of County Commissioners and FDEP on coastal management matters.

An analysis of existing state and local regulations to protect the beach and dune system shows that the Palm Beach County Coastal Construction Control Line is deficient in protecting the beach and dune system due to changes in the legislative intent and substantial advances in technical methodologies used to replicate storm impacts. In addition, benefits derived from enactment of the 30-year erosion line are limited in Palm Beach County since the line, by statute, cannot extend any further landward than the established CCCL. However, these limitations in protecting the beach and dune system will be addressed when the State of Florida re-establishes the CCCL for Palm Beach County.

Establishment of a new CCCL will allow for better enforcement of the 30-year erosion line for new construction. However, structures seaward of the CCCL and the 30-year erosion line will be affected in the long term by erosion due to sea level rise. Sea level rise, a worldwide phenomenon, is expected to increase due to warming of the earth. Measures to protect affected structures and their impact to the beach and dune systems will need to be analyzed. The Beaches and Shores Council plays an important role in considering the potential impact of those proposed measures and providing political support for appropriate shore protection alternatives.

Nearshore ecosystems are currently protected through the environmental permitting process administered by the Federal and State agencies. Conflicts arise in attempting to balance protection of these resources with protection of upland resources and development by the placement of large quantities of fill, as occurs with beach nourishment (Vare, 1991). Protection of nearshore resources has improved somewhat as a result of increased understanding of the ecological importance and value of this community. PBCERM considers these resources in designing appropriate shore protection projects.

The State of Florida has recognized the necessity to protect marine turtles and their nests and eggs since 1953. Species recovery plans (which are required by the Federal Endangered Species Act) have been developed for all species nesting in Florida. The plans identify the

ORDINANCE NO. 97-49

steps necessary for slowing the rate of decline of listed species and make conservation recommendations for management. The plans recommend that local governments enact lighting ordinances and evaluate the extent of hatchling disorientation.

Protection of sea turtles has improved on Palm Beach County beaches as a result of increased local, State and Federal regulatory action and public education. All beaches in the county have a coastal lighting ordinance to reduce the negative effects of beachfront lighting. In 1996, the county ordinance (Section 9.1, Sea Turtle Protection and Sand Preservation) was modified and covers 17 miles of shoreline and applies to unincorporated Palm Beach County and 9 Municipalities (Tequesta, Jupiter Inlet Colony, Jupiter, North Palm Beach, Riviera Beach, Palm Beach Shores, Lake Worth, Manalapan and Boynton Beach). Most construction and shore protection activities are regulated by the State and Federal governments. Public education has probably been the most effective tool in providing increased protection since it helps the public understand the importance of local beaches to sea turtles, the impacts of coastal development and identifies the methods of reducing human impacts.

It has become apparent since the county formed PBCERM, that better intergovernmental coordination is critical in successfully managing the coastal and estuarine resources of the county.

(g) Public access facilities

See discussion of water-dependent and water-related facilities, above. See also the Parks and Recreation Element for detailed discussion of public access facilities. In summary, Palm Beach County's supply of beach parks and access points is substantial, and there is not likely to be any funding expended on purchasing additional land, other than for the protection of environmental sites. The emphasis over the next planning period will be in providing additional parking and otherwise increase the public's access to these sites. On the other hand, the number of sites providing the public with boating access (marinas, ramps, etc.), though considerable, continues to trail demand.

(h) Infrastructure

There are no large-scale infrastructure projects scheduled for the unincorporated coastal area, other than road expansions. These include the expansions of the Indiantown Road and Donald Ross Road bridges over the Intracoastal Waterway from two to six lanes, slated to begin construction in 1996 and 1997 respectively. The proposed facilities are not expected to alter the circulation patterns, foster accumulation of contaminants in sediments or have a significant impact on the water quality of the estuaries. The Florida Inland Navigation District (FIND) is responsible for and provides dredge material sites pursuant to 9J-5.006(1)(f)3. The district has completed a study which provides the basis for management of its sites. PBCERM coordinates with FIND to manage some of the sites for environmental enhancement purposes and to find suitable beach disposal sites (for beach compatible dredge spoil) to augment the county's shoreline protection efforts.

(i) Port of Palm Beach

The following information about the Port of Palm Beach has been summarized from the Port's Master Plan prepared by Gee & Jenson in July, 1988, and updated by Gee and Jenson in 1995 and 1996. The County cannot attest to the accuracy of the data or the validity of the findings presented here:

The Port of Palm Beach is located in the City of Riviera Beach about 64 miles north of Miami and approximately 278 miles south of Jacksonville. The Port complex fronts Lake Worth and has access to the Atlantic Ocean by means of a dredged channel through the Lake Worth Inlet.

The Port district currently owns 209 acres of land; 66 acres are located east of U.S. 1, 58 acres west of U.S. 1, 48 acres near I-95 and 35 acres on Peanut Island. The Port also operates approximately five miles of railroad track that connects with the Florida East Coast Railway system. Service is provided twenty-four hours a day, seven days a week upon demand. The

system can handle over 600 cars at a time. Most of the Port's property is used for storage space and for container marshaling. The warehouse is located adjoining ship berths 2,3,9, 5, 6, and 13. Other warehousing is located west of U.S. 1 both north and south of State Road 710.

The Port of Palm Beach was chartered by the State of Florida in 1915 to assist the economic development of Palm Beach County. A Port taxing district was also created that includes approximately 1,000 square miles of property within the County. The Port competes within the Southeast Florida region with Port Everglades, Port Canaveral, Port of Ft. Pierce, and the Port of Miami. Like the other Florida ports, the Port of Palm Beach is a gateway for incoming goods to serve the growing population of Palm Beach County and the Southeast region. Competition among the ports is rigorous and is often affected by forces outside the region. Even with this competition, the Port of Palm Beach now ranks fourth among Florida's 14 deepwater ports in the number of containers handled. The ocean-going cruise operation of Palm Beach Cruise Lines, which began in Fiscal Year 1985, represents a new tourist opportunities for the County.

The impact area of the Port in Southeast Florida includes the counties of Palm Beach, Martin, St. Lucie, Okeechobee, Highlands, Glades, Hendry, Dade and Broward. Overall use of the Port facilities has continued to increase over the years. Since 1975 the tonnage has almost quadrupled. With the exception of office space and vacant areas, land at the Port is primarily devoted to handling and storage of goods.

Revenues for the Port are derived by charging for the use of its facilities, including fees for land and building rentals, railroad switching, dockage, wharfage, storage, handling, water, labor and other services. The charges are enough to offset costs and pay debts each year. Through careful budgeting, trade and tariffs, the Port is financially self-sufficient, an important factor in developing plans to meet future Port needs. The Port of Palm Beach is currently in the midst of a dock rehabilitation program that will increase the dock space available and may be expected to increase slightly the growth rate of shipping. The Port has physical space limitations for waterfront expansion, and its proximity to residential areas has tended to constrain the Port's development.

The future land use of the Port is expected to undergo some change in future years. The Port plans to acquire various properties by the year 2000, including the non-Port-owned properties west of Route 1, that will be required to meet the growing containerized cargo storage needs. Based on the Port's business and tonnage forecasts, additional land will be needed to meet the Port's facility needs in future years. In the event the Port acquires the above-noted properties, those acquisitions would add nearly 24 acres to the developed complex, thereby increasing the total terminal acreage (exclusive of Peanut Island) from 124.8 acres to 148.6 acres.

i—Environmental Considerations

The Port terminal is located on the Atlantic Coastal Ridge and elevations average six feet above mean sea level. The soils at the terminal are of the St. Lucie-Payola Association, which is well drained, nearly white sand with a thin, gray surface layer. Peanut Island is a spoil site deposited from previous dredging operations. The soil that comprises this man-made island was dredged from the inlet, the turning basin and the Atlantic Intracoastal Waterway.

The waterfront portion of the Port terminal is located in flood zone A-7 on the National Flood Insurance Rate Map. "A" zones are areas of the 100-year flood. The Port also includes a designated "B" zone which is defined as an area between the limits of the 100-year and 500-year floods. The majority of the Port terminal property (approximately 80 percent) is designated Zone "C". A "C" zone is not a flood-prone area.

The Port must recognize the presence of endangered species in the sensitive coastal environment and take all reasonable steps to minimize their intrusion on the commercial activities at the Port.

The land uses within the Port are predominantly water-dependent and commercial. To the south is the Riviera Beach power plant operated by the Florida Power and Light Company.

ORDINANCE NO. 97-49

Beyond the immediate Port area to the west is a single-family, high density residential district and a multi-family residential area. There are some scattered commercial and port-related facilities nearby. To the south of the power plant is a small park, undeveloped land and some single-family and multi-family housing. The northern land uses include a marina, multi-family housing and some commercial and governmental offices.

~~ii Safety and Regulation of Hazardous Materials~~

~~The handling, shipping, storage, and disposal of hazardous materials are governed at the federal and state levels. Although the Port is not primarily a hazardous materials handling and shipping facility, some transient storage and storage of hazardous materials does take place. Each hazardous material handling event is examined separately to ensure that appropriate procedures are in place to deal with possible spills. The storage practices for solvents, degreasers, refrigerants, lubricants, hydraulic fluid, gear oil, engine oil, and detergents are currently being reviewed by the Port and the Port tenants to ensure compliance with applicable laws.~~

~~The most noteworthy hazardous cargo shipped through the Port is fuel oil. Fuel oil represented approximately 33 percent (1.4 million tons) of the Port's entire cargo tonnage in 1994. Small quantities of hazardous materials may be shipped from time to time; however, prior approval by the Port is required and tariff documents clearly state the Port's right to refuse hazardous materials. The excellent safety record of the Port of Palm Beach with respect to hazardous cargo handling is the result of the Port's compliance with all applicable federal and state regulations. Furthermore, annual Port inspections by the Coast Guard are comprehensive and very detailed. The inspection program is not limited to landside facilities only. Petroleum tankers are also subjected to annual inspections with a range of enforcement options including fines and restrictions.~~

~~In addition to other Coast Guard regulations, Congress has enacted the Act to Prevent Pollution from ships, with enforcement responsibility assigned to the Coast Guard. The Act results from growing international concern about maritime pollution due to ship-generated waste. Under the program, all ports are required to provide reception facilities for oil and garbage wastes generated by shipping vessels. The Port of Palm Beach has obtained a Certificate of Adequacy from the Coast Guard to indicate the Port's full compliance with the terms, conditions, and provisions of the Act.~~

~~iii Spill Response Plans~~

~~In the event of a petroleum or hazardous chemical spill, the spiller has primary responsibility; the U.S. Coast Guard, the Florida Department of Environmental Protection (FDEP) and the Port of Palm Beach have oversight responsibilities for implementing a formal response plan. Any petroleum spill occurring within the Port basin may be contained through deployment of containment booms. Spills are reported by the Port to the Coast Guard and the Florida Marine Patrol. No major spills of significant environmental consequence have occurred in recent years. Under the standing policy of the Port administration, containers that leak or otherwise indicate a potentially hazardous condition will not be moved and necessary precautions will be taken promptly. The Port periodically reviews its petroleum and hazardous material handling procedures and implements policies to minimize the harmful effects to human life and the environment due to spills. Cargo handlers at the Port are required to comply with all Federal and State response plans.~~

~~The Port is a member of the Port of Palm Beach Environmental Protection Committee. The association is an advisory body to FDEP regarding liquid spill prevention. It also helps institute effective procedures to be activated for the cleanup of spills.~~

IV. PLAN DESCRIPTION

~~It is the intent of the County to promote the responsible management of the County coastal area. The proper management and use of this area is necessary for the protection of life and~~

ORDINANCE NO.

97-49

property from natural disasters as well as the conservation of natural resources. Through coordination with federal, state, local agencies and municipalities, a renewed commitment to public education and strict enforcement procedures, the coastal area can be protected to benefit society. The county Planning, Zoning and Building Department, Department of Environmental Resources Management and the Department of Emergency Management are primarily responsible for guiding implementation of the goals and objectives of this element.

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ORDINANCE NO. 97-49

B. Utility Element, EAR Based revisions, additions, and deletions

CONSOLIDATION OF THE POTABLE WATER & SANITARY SEWER, STORMWATER MANAGEMENT, AND SOLID WASTE SUB-ELEMENTS INTO A NEW UTILITY ELEMENT:

1. OVERALL INTRODUCTION TO THE NEW UTILITY ELEMENT:

OVERALL INTRODUCTION

A. Purpose

The Utility Element of the Palm Beach County's Comprehensive Plan consists of three Sub-Elements: Potable Water and Sanitary Sewer, Solid Waste, and Stormwater Management. The purpose of this Element, per Rule 9J-5, F.A.C., is to provide for necessary public facilities and services correlated to future land use projections.

B. Assessment & Conclusions

Goals, Objectives and Policies are expressed in each of the Sub-Elements, addressing the County's desire to maximize the use of existing facilities, correct existing deficiencies, promote a more efficient land use pattern, and conserve and protect water resources. Diversified levels of service standards have been adopted in this Element for the purposes of determining capacities and levels of protection. It is the objective of the County to require that services be provided concurrent with development. Level of service standards must be met for issuance of Development Orders.

It is also the objective of the County to protect water resources. The Sub-Elements address the protection and preservation of water resources and water quality, the conservation of potable water and the use of reclaimed water, safe management and disposal of solid and hazardous wastes and protection of wellfields, and prime aquifer recharge areas.

While each Sub-Element focuses on a specific utility or facilities, all are interrelated, as they are interrelated with other Elements of this Plan. For example, sanitary sewer demand and the necessary capacities are correlated to potable water use. Disposal of treated effluent and solid/hazardous waste has the potential of affecting groundwater quality, as does stormwater runoff found in surface waters. The agriculturally designed drainage system must be sufficient to provide protection for residential structures and septic tanks. Septic tank malfunction and infiltration of waste into the groundwater system is of concern. Protection of the aquifer system and wellfields through conservation and reuse, recharge enhancement, limitations on withdrawal, regulation of land use, and maintenance of minimum flows and levels will ensure the availability of an adequate water supply for all competing demands, maintain and enhance the functions of natural systems and preserve water quality.

Several regional water supply and surface water management studies and projects are being developed in South Florida. Many of these projects will have a significant impact in Palm Beach County. Among the most critical projects are:

- The US Army Corp of Engineers Central and South Florida Restudy (Restudy), authorized by the US Congress in 1992 and due by 1999. This project will study modifications to the water management system to protect the Everglades and improve other functions including water supply. The Restudy was fully integrated in 1995 with the Lower East Coast Water Supply Plan, which will be released in 1997. Another programs under the umbrella of the Restudy are the development of Water Preserve Areas, which would enhance the East Coast Buffer along the Everglades Water Conservation Areas, and the Southern L-8 Project, which would capture water from the southern L-8 Basin, provide water quality treatment, and route water to the West Palm Beach Water Catchment Area and the Loxahatchee River and Slough, when needed.
- In 1994 the Federal and State governments entered into a settlement agreement and

ORDINANCE NO.

97-49

the Everglades Forever Act was enacted. The implementation of this act includes the development of Stormwater Treatment Areas (STA's) in the Everglades Agricultural Area with the purpose of filtering phosphorus and other detrimental nutrients going to the Everglades.

- Several Federal and State legislative initiatives and regulatory programs are being currently discussed which might also have an impact on the surface and groundwater management situation in South Florida and particularly in Palm Beach County.

Palm Beach County should continue to actively participate in all the above described projects and follow the outcome of the several initiatives. Further analysis of these issues should be reflected in the Utility Support Document and modifications or updates to the Goals, Objectives and Policies should be implemented as needed.

POTABLE WATER & SANITARY SEWER SUB-ELEMENT

2. REVISED Potable Water & Sanitary Sewer - GOAL 1:

PROVISION OF SERVICES

- To provide potable water and sanitary sewer service in the Palm Beach County Water Utilities Department service area; and to assure provision of these services in other unincorporated areas not served by Palm Beach County Water Utilities Department, and permitted to develop at urban densities. The provision of service shall be within the *Urban Service Area* and in accordance with the growth management guidelines; and
- To allow for the provision of water wells, septic or sanitary service in unincorporated areas not served by ~~PBCWUD~~ public utilities, in accordance with the growth management guidelines.

3. REVISED OBJECTIVE 1.7 - Potable Water & Sanitary Sewer - Conditions for the provision of potable water and/or sanitary sewer and for the correction of existing and potential deficiencies

Potable water and sanitary sewer shall be provided only in the areas defined below, in order to protect public health, make the best use of available capacity and discourage urban sprawl:

- ~~Urban areas~~ Areas within the Urban Service Area, including areas deficient in service;
- Areas that must be served to insure system efficiency; and
- Areas specifically designated for potable water due to public health and safety requirements.

4. REVISED Policy I.7-a - Potable Water & Sanitary Sewer: ~~The County shall provide~~ Central water and sewer service shall be provided to those developed unincorporated areas where it has been determined by the Palm Beach County Public Health ~~Unit~~ Department (PBCHD) that use of private wells and/or septic tanks poses a health threat.

- PBCHD shall identify those areas where a public health emergency exists or is imminent due to failing septic tank systems. Upon notification of emergency the ~~PBCWUD~~ Utility with jurisdiction over the identified area shall implement steps to extend water and/or sewer service to the affected areas.

ORDINANCE NO.

97-49

5. **NEW Goal area for Potable Water & Sanitary Sewer:**

GOAL 2

WATER AND GROUNDWATER PROTECTION

OBJECTIVE ~~1.92.1~~ Water Conservation

Palm Beach County shall continue to implement procedures and programs to conserve water through reuse, and other methods, consistent with federal, state and regional policy plan goals and regulations.

Policy ~~1.92.1-a~~: Palm Beach County encourages and promotes innovative alternative reuse technologies to augment water resources including: conventional ~~reuse~~ reclaimed water irrigation piping systems, constructed wetlands, aquifer storage and recovery (ASR), groundwater recharge and indirect ~~potable~~ reuse systems.

Policy ~~1.92.1-b~~: The County shall require the use of ~~i~~rrigation ~~q~~uality (I.Q.) reclaimed water for irrigation in any ~~new~~ development within the Palm Beach County Water Utilities Department Mandatory Reclaimed Water Service Area (MRWSA) or where a reclaimed water main is within ~~500~~300 feet of the property to be developed.

- The MRWSA shall correspond to the area surrounding the Southern Region Water Reclamation Facility on Hagen Ranch Road in suburban Delray Beach (See detailed description of this area in Section III.A.4 of this sub-element)
- If all or a portion of any new development or project falls within the MRWSA, the entire development or project shall be required to use reclaimed water service.
- No new customer shall construct or use a new irrigation system which does not use reclaimed water where reclaimed water service is available.
- Notwithstanding the above requirements, other customers may connect to the reclaimed water system with the approval of the Department.

Policy ~~1.92.1-c~~: Text remains the same
Policy ~~1.92.1-d~~: Text remains the same
Policy ~~1.92.1-e~~: Text remains the same
Policy ~~1.92.1-f~~: Text remains the same
Policy ~~1.92.1-g~~: Text remains the same
Policy ~~1.92.1-h~~: Text remains the same
Policy ~~1.92.1-i~~: Text remains the same

OBJECTIVE ~~1.102.2~~ ~~Water and Groundwater protection~~

The text of the objective remains the same

Policy ~~1.10-a2.2-a~~: Text remains the same
Policy ~~1.10-b2.2-b~~: Text remains the same
Policy ~~1.10-c2.2-c~~: Text remains the same

Policy ~~1.10-d2.2-d~~: The County and the ~~PBCHU~~ Palm Beach County Health Department shall continue to enforce the provisions of ~~Section 3, sub-section 12 of ECR-I~~ the ULDC (Article 16 - Health Department regulations, Section 16.1.3(12) of Environmental Control Rule D, which requires the abandonment of on-site systems and connection to a central system within 90 days of the availability of said central system.

ORDINANCE NO. 97-49

STORMWATER MANAGEMENT SUB-ELEMENT

6. Changes from drainage to stormwater

Per recommendation of the EAR the name of this sub-element was changed in previous amendment from *Drainage* to *Stormwater Management*. This change was suggested for consistency with rule 9J-5.011. Post-EAR review has indicated that references to *drainage* throughout the sub-element should be changed to *stormwater* where appropriate. Thus, unless otherwise indicated below, the majority of text amendments to this sub-element are to update references in the text from *drainage* to stormwater.

7. Introduction, Section B; and Definitions and Technical Concepts, 2nd bullet:

B. Assessment and Conclusions~~Principal Findings and Plan Approach~~

A major consideration throughout this Sub-element is that the existing primary surface water management system is expected to remain essentially fixed in capacity. The various jurisdictions in the County must coordinate efforts in order to provide acceptable levels of protection under this constraint. The future of stormwater and surface water management in the County will be dependent on allocating ~~drainage~~ stormwater/runoff discharge in a fixed system. While such discharges are under the permitting jurisdiction of the *South Florida Water Management District* and the ~~twenty several~~ drainage, water control, or improvement districts, the County is charged with regulating the on-site secondary and tertiary systems. Site-specific ~~drainage~~stormwater designs, requiring retention/detention and other non-structural techniques, will be the focal point of the County's campaign.

2. Functional classification of ~~drainage~~stormwater systems

For planning purposes, surface water management and ~~drainage~~stormwater facilities may be divided into three general functional categories of interacting systems: primary, secondary and tertiary.

- **Primary Systems:** The "primary system" consists of classified surface waters of the State including canals and/or natural water courses providing final conveyance of overall drainage basin flows to the ocean or major inland water bodies. This is the outlet system for the basin. Capacity is essentially fixed by original design as well as natural, economic and environmental constraints that preclude significant upgrading or expansion. In Palm Beach County, permitting and operational jurisdiction over this portion of the system is held by the South Florida Water Management District and various Drainage, Water Control or Improvement Districts; ~~authorized by Chapter 298, F.S.~~

8. Objective 3.2 Assessment of Stormwater Management Programs

Given the existing functional structure of stormwater systems in Palm Beach County, and the diversity of operational jurisdictions involved in the management of such systems, Palm Beach the County shall cooperate with the SFWMD and the Special Districts ~~under the lead of the SFWMD~~; in the identification and assessment of stormwater and surface water problems and the definition of remediation strategies.

Policy 3.2-a: The County shall cooperate with the SFWMD and the Special Districts in establishing monitoring programs to evaluate whether adopted levels of protection from flooding and inundation are adequate. In this cooperative effort:

- The County, within the Office of the County Engineer, shall continue the informal complaint review and referral process to monitor stormwater and surface water problems and informal records based on citizen inquiries, stormwater and surface water maintenance records and current file reports.

ORDINANCE NO.

97-49

- The County shall request that Special Districts compile and maintain similar records: , with emphasis on situations affecting the primary and secondary systems under their jurisdiction.
- An inventory of basin-wide surface and storm water management situations and problems affecting the primary system shall be the responsibility of the SFWMD.

UPDATING REFERENCES TO THE HEALTH DEPARTMENT

9. References to the Palm Beach County Health Department (Formerly Health Unit)

This text amendments update all references to the *Palm Beach County Public Health Unit* -- a Division of the FL Health & Rehabilitative Services (HRS) -- which name was changed to Palm Beach County Health Department. The following policies would be updated:

- Policy 1.1-b- Potable Water & Sanitary Sewer - Second bullet,
- Policy 1.2-b- Potable Water & Sanitary Sewer,
- Policy 1.3-b Potable Water & Sanitary Sewer,
- Policy 1.5-b Potable Water & Sanitary Sewer,
- Policy 1.7-a - Potable Water & Sanitary Sewer,
- Policy 1.7-b-Potable Water & Sanitary Sewer,
- Policy 1.102.2-e - Potable Water & Sanitary Sewer,
- Introduction, Section A - Purpose, Solid Waste, third paragraph, AND
- Policy 1.3-b - Solid Waste.

TRANSFER OF DATA AND ANALYSIS SECTIONS TO THE SUPPORT DOCUMENT

10. This amendment includes transferring the Existing and Future Conditions and several other data and analysis sections from the Stormwater Management and Solid Waste sub-elements to the new Utility Support Document. The transfer is part of the incorporation of the new format for the *elements* and *support documents* of the Comprehensive Plan.

Stormwater Management Sub-Element

III. — EXISTING CONDITIONS

~~Palm Beach County has few natural drainage features. Most are manmade conveyance facilities, designed for long-term drainage of surface and groundwaters to create and maintain agricultural lands, and to provide flood protection from major storms for developed areas west of the coastal ridge. The sole significant natural drainage feature found in the County is the Loxahatchee Slough/River Corridor (See Conservation Element). The characteristics of this natural system have been altered by urban development and flood management structures, resulting in reduced freshwater inflows to the headwaters and progressive intrusion of brackish tidal waters into the upstream marshes. The Slough/River have been incorporated into the system of the C-18 basin.~~

~~The current primary drainage basins (See Map 21) of Palm Beach County were first delineated in the 1950s by the US Army Corps of Engineers (COE) in their *General Design Memorandum for the Central and Southern Florida Flood Control Project* (Project). Based on the hydrology of the basins, the COE designed and constructed a system of canals, levees, and control structures to provide flood protection for Southern and Central Florida. Most of the works constructed under the Project are now under the operational jurisdiction of the South Florida Water Management District (SFWMD).~~

— A. — Function

ORDINANCE NO. 97-49

The Project canals in Palm Beach County serve a variety of functions, including:

- o Flood protection;
- o Land drainage for agricultural and urban development;
- o Regulation of groundwater elevations;
- o Prevention of saltwater intrusion;
- o Water supply for irrigation; and
- o Recharge of wellfields.

The Project control structures in Palm Beach County regulate the flow of water in the canals. In general, they are used to discharge excess water from the basins during wet weather and to maintain minimum water levels in the canals during drought periods. Some structures are normally in the closed position to prevent water from passing from one basin to another, but can be opened to supply water from one basin or canal to another as necessary. The coastal structures have the additional function of preventing upstream intrusion of saltwater in those canals discharging to tidewater. An extensive intermediate network of secondary canals and control structures under the jurisdiction of the twenty drainage/water control districts in the County (See Map 22) collects from the tertiary systems and discharges to primary basin canals.

B. Drainage Basin and Districts

Six primary drainage basins are located in eastern Palm Beach County: the C-18, C-17, C-51, C-16, C-15 and the Hillsboro Canal Basins. Water Conservation Areas (WCAs) 1 and 2A and the Everglades Agricultural Area (EAA) occupy the western half of the County.

Runoff characteristics of the six eastern basins and the conveyance capacity of their major canals and structures have been analyzed by SFWMD (*An Atlas of Eastern Palm Beach County Surface Water Management Basins*, SFWMD, 1988). A portion of this assessment will contain SFWMD's commentaries on the original design capacity of the project canals, significant changes to the basin and its works (i.e., urban development or enlargement of a canal) since the COE *General Design Memorandum* was written, and SFWMD's proposals under consideration to redefine the basin or to modify canals or control structures. Also assessed are the western EAA basin, the WCAs, and the Chapter 298 drainage districts.

1. C-18 Basin

The C-18 basin has an area of approximately 105.8 square miles. The C-18 canal was designed to pass the runoff from a 30-year storm from mostly agricultural lands. It was assumed that the lands in the western part of the basin, the J.W. Corbett Wildlife Management Area and the test area for the Pratt and Whitney Aircraft Group, would act as a water storage area that would not release water to C-18 until after downstream floodwaters had receded. This assumption has proven to be incorrect. Runoff into the western branch of C-18 greatly exceeds that for which the western reach was designed. The South Florida Water Management District restricts runoff rates on permit applications to one inch per day for lands west of State Road 710. This rate protects pasture land in the area from flood damage; however, it still exceeds the design capacity of 190 cfs (or 0.16 inches of runoff per day) for the western reach and the C-18 weir. As a result, SFWMD's "Technical Publication 88-11 for the C-18 Basin" recommends a reduction of approximately 0.5 inches per day.

A calculation of the hydraulic profile of the C-18 canal for runoff from the design storm showed the following: the western branch, above the C-18 weir, is greatly under-designed; the eastern branch, upstream of its confluence with the western branch, is adequate to pass the design-storm runoff; and the lower reach of the west branch and C-18 below the confluence of the branches have a capacity 30 percent in excess of the design capacity. The excess capacity results from the fact that various subdivisions in the basin were expected (in the original design) to discharge to the lower reach of the western branch. Subdivisions discharge to the upper reaches of the east and west branches, where channel capacity is less. This situation has increased the flooding in the upper reach of the western branch and decreased the flow elsewhere in C-18.

The Northern Palm Beach County Water Control District (NPBWCD) encompasses approximately 171.9 square miles. The NPBWCD surface water management system is operated with both gravity

ORDINANCE NO.

97-49

flow and pump systems. The NPBWCD's units of development (there are approximately 30, with some of them being inactive) discharge to one of four receiving bodies: C-18, C-17, and C-51 canal basins as well as the Intracoastal Waterway and Loxahatchee River. Two types of drainage systems are present: conveyance (canal) systems and detention systems. Newer units of development have a water conservation philosophy and, therefore, are designed as detention systems.

Newer units of development, especially those in the C-18 basin, rely on forced flow and have massive retention programs. All units were designed to handle the 30-year storm. Allowable discharges vary (per SFWMD permit) from one inch/day to four inches/day. The two units which discharge to C-51 are designed as one inch/day to four inches/day

"bleed-down" systems. All development projects must provide on-site retention with zero outfall.

The NPBWCD's system provides adequate protection with few flooding problems. As with other drainage districts, flooding problems do occur in adjacent areas. Older projects, developed prior to regulations, have no on-site storage capability and as a result, have drainage problems. This is true in the C-17 basin. These tertiary systems, however, do not fall under the special district's jurisdiction, and unless a "special taxing district" is created, they will not be improved or maintained by NPBWCD. Capital improvements are undertaken on a unit-by-unit basis. Financing of drainage systems for new projects and environmental management programs are major areas of improvements for the District.

--- 2. C-17 Basin

The C-17 basin has an area of approximately 33 square miles. The C-17 canal was designed to pass the runoff from a 30-year storm. In 1955, when the COE completed its *General Design Memorandum* (GDM) for C-17, most land in the basin was unimproved (i.e., native range) or in agricultural production (i.e., improved pasture, truck crops, and citrus), with minor urban development along the east side of the basin. The study predicted that by the year 2005 the population in the basin would increase to 19,000. This population was exceeded by 1970, at which time the SFWMD requested that the COE restudy the basin. A Survey Review Study completed in 1975 concluded that the design discharge for the basin should be for the 30-year storm for an urban area, rather than for the 30-year storm for an agricultural area used in the original design. This increased the design discharge from 2070 cfs to 3700 cfs, indicating the need to enlarge the canal and install an additional gate in control structure S-44 to pass 3700 cfs from the basin. The study further concluded that the benefit-cost ratio for making the required changes to C-17 and S-44 was less than 1.0 and that the COE could not participate in making these changes. The SFWMD is investigating the possibility of making the required changes to C-17 and S-44 without the COE's participation.

Some sections of the canal have already been enlarged under various free digging contracts. As there is sufficient demand for fill material in the area, the remainder of the canal can be enlarged by free digging at no cost to the COE or the District. A new proposal has been submitted to COE that includes only those modifications to S-44 necessary for the structure to pass 3700 cfs.

Inflows to C-17 are by various canals under the management of local municipalities. Two important tributaries are the City of West Palm Beach canals that drain the lands in the basin south of 45th Street. These canals join south of 45th Street to form the canal that continues north of 45th Street as C-17. One canal flows to the north, parallel to I-95 from the Palm Beach Mall. Drainage from the west passes under I-95 near the Palm Beach Mall to join this canal. The other main tributary drains the lands to the east of Lake Mangonia and Clear Lake.

Some flooding occurs at less than the design discharge in the upper reach of the City of West Palm Beach canal that drains the area south of 45th Street and east of Lake Mangonia and Clear Lake. Some of the flooding results from the high stage held in the canal behind the weir at 45th Street. The proposal to modify S-44 includes a provision for the removal of the 45th Street weir. If the weir is removed, some of the flooding will be eliminated.

--- 3. C-51 Basin

The C-51 basin has an area of approximately 164.3 square miles. The basin is comprised of two sub-basins (C-51 west and C-51 east). C-51 provides less than 10-year flood protection for the C-51 basin. Considerable flooding occurs in both the eastern and western basins with a 30-year storm.

ORDINANCE NO. 97-49

Control Structure S-155 in the eastern basin was designed to give the eastern basin 1-30 year flood protection. However, without a divide structure just west of U.S. Highway 441 and a pump station to remove water from the western basin, there will continue to be flooding in the basin during storms of severity equal to or greater than a 10 year storm. The Army Corps of Engineers has studied the feasibility of constructing a divide structure at U.S. Highway 441 and of constructing a pump station at the western end of C-51 to pump 3400 to 3800 cfs of runoff from the western basin. However, a decision as to where the runoff from the western basin should be pumped has not been made. Presumably, if a suitable location to receive the pumped discharge from the western C-51 basin can be determined, a final design will be completed and implemented.

Inflows to C-51 are by various Lake Worth Drainage District (LWDD) canals. These canals (e.g., E-1, E-2, E-3, E-4 and the Stub Canal) can have very large inflows to C-51. Depending on the stages in C-51, the Stub Canal alone can have inflows to C-51 of up to 1500 cfs. This is approximately 30 percent of the capacity of S-155.

Clear Lake and Lake Mangonia at the northeast corner of the C-51 basin are part of the City of West Palm Beach water supply system. Under operation as a water supply system, these lakes are hydrologically independent of the C-51 basin. Regulated inflows to the lakes from the M-Canal replenish water withdrawn for the City of West Palm Beach municipal water supply, in excess of water supplied by rainfall. Rainfall is an unregulated inflow to the lakes. If a severe storm causes enough rainfall on the lakes to raise the stage in Clear Lake above 14.5 ft. NGVD, up to 250 cfs of flow can be passed from Clear Lake to the Stub Canal. The 250 cfs discharge to the Stub Canal allows the 14.5 ft. NGVD stage in Clear Lake to be maintained for rainfall from at least a 100-year storm.

The Palm Beach Stub Canal, located north of Palm Beach International Airport, is a County-maintained canal. The 6-year Capital Improvement Plan contains five million dollars for improvements to this canal. The improvements are intended to alleviate flooding problems in the area.

The drainage area of the C-51 basin has recently been decreased. Lands formerly in the north central part of the basin that are in the Indian Trail Water Control District now normally drain to the L-8 basin. Under an emergency situation, however, water can be discharged from these lands to the C-51 basin with the approval of the Executive Director of the SFWMD.

Inflows to C-51 are also by Acme Improvement District (AID) canals. Acme Improvement District is one of the major drainage districts in the C-51 basin. Its service area of 28.44 square miles includes 78 miles of canal and 200 acres of lake. The SFWMD permits discharge at the rate of one inch per 24 hours.

The Acme Improvement District was designed for agricultural land uses; however, the area is now in primarily residential uses. With more water surface area, such as retention lakes and increased storage/capacity of canals, AID is able to provide adequate drainage service.

A theoretical line runs through the middle of the district. All drainage to the north of this line is to flow into the C-51, and the southern half is to flow to the L-40 (WCA). But in reality, hydraulic pressure is to the north throughout the service area. If AID were to follow the design concept, it would have to constantly run pumps to fight infiltration. With permission of SFWMD, gates are open to allow natural northward drainage.

Acme Improvement District is able to provide drainage with relatively few flooding problems. One known problem exists in the South Shore II A area. Roadways are not found at standard elevations and flooding does occur during major storm events. To combat this problem, however, AID has placed a pump in the area and is able to manually reduce inundation.

C-51 is the greatest flooding danger to AID. As development activity continues, more quantities are being discharged into the canal; thus, elevations are higher. Higher levels in the C-51 because of storm events flood the agricultural lands to the west. This flooding, in turn, flows (floods) over the AID dike and into the district. The Corps of Engineers does have the authority to put a retention reservoir into the C-51 basin that would not only reduce this problem but provide for water conservation and protection of property. The SFWMD is investigating the possibility of moving

ORDINANCE NO. 97-49

forward with system improvements without the COE's participation.

While designed under SFWMD criteria (i.e., 25-year, 3-day storm, 1 inch allowable runoff per 24 hours), AID is contemplating improvements for better efficiency (versus capacity). Lake Wellington is an integral part of the water retention area. The district would like to add more retention areas, however, and looking to acquire property for this purpose. Ongoing maintenance is another area of improvement for the district. AID is rebuilding Pump Station #2 for better efficiency. For the past twelve years, the district has instituted a water quality testing program. According to the tests, AID has never violated water quality standards.

The Indian Trail Water Control District (ITWCD) is another independent district that partially discharges to C-51. ITWCD incorporates 94 square miles and 411 miles of canal. The drainage system was designed to free flow three inches of water per day to C-51. In 1972, however, under a new philosophy of water conservation, this discharge was reduced to one inch per day. This new requirement led to the modification of the system. ITWCD is subject to SFWMD drainage criteria (3-year design storm, 1 inch /24 hour runoff). Canals in the M-1 Acreage Area are currently being widened to anticipate projected capacities at buildout (13,000 dwelling units). New development elsewhere in the district will not impact the system; it will be required to supply and maintain its own drainage/retention system.

Flooding problems do arise in non-ITWCD controlled areas. Opting not to petition for "activation" into ITWCD, developers build residential projects with their own systems. After the developer is no longer responsible, homeowners find that there is no one maintaining the system when flooding occurs. Under SFWMD permit requirements, a homeowner's association is the responsible entity to maintain the drainage system.

Elsewhere, in the activated areas, there are no major problems. Minor localized flooding problems are remedied with maintenance.

Indian Trail Water Control District's plans for improvements call for widening of canals (adding capacity), ongoing maintenance and the addition of pumps (maintaining/improving flow).

Loxahatchee Groves Water Control District serves 12.5 square miles of mixed uses and discharges to the C-51 canal.

Pine Tree Water Control District serves 7.8 square miles, mostly agricultural use, and discharges to C-51.

Seminole Water Control District serves 6.3 square miles of agricultural land and discharges to C-51.

4. C-16 Basin

The C-16 Basin has an area of approximately 52.8 square miles and was designed to pass the runoff from a 30-year storm. Inflows to C-16 are by various Lake Worth Drainage District (LWDD) canals. Because some of the north-south flowing LWDD canals do not have divide structures between the C-16 and the C-15 basins, between the C-16 and C-51 basins and between the C-15 and Hillsboro basins, some interbasin transfer of water may occur.

The LWDD canal system was designed for 25-year flood protection. The entire system has not yet been constructed to design specifications. LWDD requires that developers planning to drain to the LWDD improve the canals to design specifications. As more of the western area of the C-16 basin is developed, the discharge at S-41 will probably increase.

The peak discharge at S-41 occurred on March 29, 1982. The flow was 5600 cfs. The Standard Project Flood discharge is only 5300 cfs. Flooding has occurred in the basin for storms of less intensity than the design storm.

ORDINANCE NO. 97-49

The Lake Worth Drainage District (LWDD) covers 208 square miles, making it the largest independent district in the eastern County. The LWDD is located in and discharges to four basins: C-51, Hillsboro, C-15, and C-16. LWDD is conducting a study of its system, its capacities and problem areas. This study, to be completed in 1990, will give the district a better indication of how

the system should be operated and maintained. Currently, the basis of its operating schedule is "pure experience". Conditions are tracked, then actions are taken. LWDD does not anticipate events or "storm predict".

The LWDD was designed for agricultural purposes (25-year storm, 1 inch of runoff/day), but it is predominantly serving urban uses. Regardless of its design criteria, the district has fixed capacities in that it is only able to provide a set level of service and must make all flow and discharge fit into the system. This would appear to present a problem, but the district has no major areas of flooding. Problems do arise, as with every system, with extreme storms. As growth continues in the service area, LWDD will be able to operate more efficiently. Regulations are in place that require new development to include on-site retention. Occasional minor problems, such as growth of grasses and creation of sandbars that hinder flow, are remedied with maintenance.

The Lake Worth Drainage District's plan for improvements consists of regular maintenance of canals and upgrading of control structures. Upon completion of its study, the district will know which canals are substandard and be able to: 1) "clean out" problem areas, 2) require new development to improve the design, or 3) require new development to provide additional storage.

The district's goal is to let new development that is increasing the burden on the system provide or pay for improvements, instead of the taxpayers.

5. C-15 Basin

The C-15 basin has an area of approximately 74.6 square miles and was designed to pass the runoff from a 30-year storm. The design stage at the west end, where the LWDD canal E-4 joins C-15, is 9.0 ft. NGVD.

Inflows to C-15 are by various LWDD canals. Because some of the north-south flowing LWDD canals do not have divide structures between the C-15 basin and the Hillsboro Canal basin to the south and the C-16 basin to the north, some interbasin transfer of water may occur. This is especially true in the western portion of the basins.

The LWDD canal system was designed for 25-year flood protection. The entire system has not been constructed to design specifications. The LWDD requires developers planning to drain to the LWDD system to improve the canals to design specifications. As more of the western area of the C-51 basin is developed, the discharge at S-40 will probably increase.

The peak discharge of 4050 cfs at S-40 occurred April 25, 1979. The headwater stage was 9.9 ft NGVD (0.9 ft NGVD above the design stage). Flooding has occurred in the basin for storms of lesser intensity than the design storm.

6. Hillsboro Canal Basin

The Hillsboro basin has an area of 102.5 square miles, 40.2 of which are located in Palm Beach County. There is no design storm for the Hillsboro Canal because it was built prior to the Project. SFWMD assumed responsibility for the canal and Deerfield Lock from the Everglades Drainage District.

The Hillsboro Canal above Deerfield Lock will pass approximately 1600 cfs without any flooding occurring in the basin. This provides flood protection of approximately three-quarters of an inch of runoff per day; however, allowable runoff into the canal above Deerfield Lock is 1.3 inches of runoff per day (35 cfs per square mile). The total allowable inflow to the canal upstream of Deerfield Lock varies from 2500 to 2700 cfs, depending on the drainage area assumed. A SFWMD hydraulic analysis made in 1974 indicated that, if all culverts and pumps discharging into the canal were operated at the allowable runoff discharge, the tailwater stage at S-39 would be approximately 11.0 ft. NGVD. Stages above 9.0 ft. NGVD cause flooding in pasturelands in the southwestern portion of the basin.

To pass the allowable discharge at a stage no higher than 9.0 ft. NGVD would require enlarging the Hillsboro Canal from Powerline Road to the west end at S-39. It would also require a new structure

ORDINANCE NO.

97-49

(to replace the spillway at Deerfield Lock), capable of passing approximately 3000 cfs at the difference between headwater and tailwater stages of 0.5 feet.

Most inflows to the Hillsboro Canal are from Lake Worth Drainage District canals in Palm Beach County. Because some of the north-south flowing LWDD canals do not have divide structures between the Hillsboro Canal basin and the C-15 basin (or between the C-51 basin and the C-16 basin), some interbasin transfer of water may occur. Land in the C-15 and C-16 basins between L-40 and Florida's Turnpike may, under some conditions, drain to the Hillsboro Canal by way of LWDD canals E-1 and E-3.

The stage held in the LWDD canals determines to some extent whether runoff in the basin enters the Hillsboro Canal upstream or downstream of Deerfield Lock. The drainage area upstream may vary by as much as several square miles as the stages in the LWDD canals vary, especially E-3. E-3 flows to the south one-half mile to the west of, and parallel to, Military Trail and enters the Hillsboro Canal just downstream of Deerfield Lock. LWDD typically operates E-3 at a stage of 10.0 ft. NGVD. At this stage, E-3 drains lands as far west as Florida's Turnpike, subtracting considerably from land that would otherwise drain to the upstream side of Deerfield Lock.

During severe storms the Hillsboro Canal develops flows to the east and to the west. The westward flow usually starts at U.S. Highway 441 or as far west as the LWDD canal E-1/2W approximately three miles west of U.S. Highway 441. The westward flow has a duration of 36 to 48 hours and causes flooding of pasturelands in the southwestern portion of the basin. The peak stage of the westward flow probably occurs one-half to three-quarters of a mile west of U.S. Highway 441. Owners of new developments in the southwestern portion of the basin are required to hold all of the runoff from their property for 48 hours. If the tailwater stage at S-39 exceeds 12.5 ft. NGVD, the developers must also accept inflows of water from outside their property and hold it in their reservoirs.

Peak discharges and headwater stages in the basin occurred during the April 25, 1979 storm. The peak discharge at Deerfield Lock was 3700 cfs with an average flow for the day of 3030 cfs. Discharges above 3000 cfs cause flooding in the Boca Raton area and in the area west of U.S. Highway 441.

~~C. Everglades Agricultural Area~~

The Everglades Agricultural Area (EAA) is a highly productive agricultural region extending from the south shore of Lake Okeechobee to the northern levees of the Conservation Area. Approximately 75 percent of the 1094 square miles within the area has been developed for agriculture. This area is referenced as the Agricultural Production Area in the Land Use Element. The remaining 25 percent of the area is mostly undeveloped, with less than 5 percent accounted for by the urban areas of Pahokee, South Bay, and Belle Glade. Low relief and unequal distribution of rainfall necessitate extensive drainage and irrigation systems. Positive drainage is required during the wet months (May-October) to protect crops and pastures from flooding. Irrigation is required during the dry months (November-April) to maintain groundwater levels and soil moisture content.

The drainage and irrigation systems consist of a network of canals, levees, control structures and pumps. The primary system was constructed by the COE and is maintained by SFWMD. The principal canals of the system are the West Palm Beach, Hillsboro, North New River, and Miami Canals. Their function, other than drainage and irrigation, includes maintenance of water table elevations. Discharge is to Lake Okeechobee or the Conservation Area. Connected to the primary system, or directly to Lake Okeechobee, are private systems providing flood protection and irrigation to individual farms. Ten independent drainage/water control districts operate in the EAA. These districts include: Pelican Lake W.C.D., Pahokee W.C.D., East Beach W.C.D., East Shore W.C.D., Highland Glades D.D., Gladeview D.D., Shawno D.D., South Florida Conservancy D., South Shore D.D. and Ritta D.D.

ORDINANCE NO. 97-49

One area of concern is the degradation of water quality within the canal. A study by SFWMD, *Overview of Cooperative Water Quality Studies in the Everglades Agricultural Area and Lake Okeechobee*, 1978, found high levels of nitrogen and phosphorus, and low concentrations of dissolved-oxygen in the drainage water. The study concluded that the mechanisms producing these nutrients appear to be the biochemical oxidation and mineralization of the soil itself. The amount of

degradation of water quality appears to be proportional to the rate of pumping. This poor-quality water is eventually discharged to Lake Okeechobee or the Conservation Areas. In response to these findings, SFWMD requires lower rates of pumping and more conservative drainage practices for the EAA.

~~—————~~ D. ——— Water Conservation Areas

Water Conservation Areas 1 and 2A are a remnant of the original Everglades marsh. They form a major freshwater link between the agricultural areas south of Lake Okeechobee and the marshlands of Everglades National Park. These impoundments were created by a system of levees and canals operating in conjunction with Lake Okeechobee to control and regulate water levels.

With increased water demand from agricultural and urban development, the Water Conservation Areas (WCAs) have become vital water storage facilities, and serve to:

- o ——— provide flood protection for urban coastal areas;
- o ——— provide irrigation water supplies;
- o ——— maintain wellfield recharge and prevent saltwater intrusion into the aquifer;
- o ——— provide Everglades National Park with a guaranteed supply of fresh water; and
- o ——— furnish important wetland habitat for plants and wildlife.

The area is characterized by poor drainage. Surface water is usually present in the marsh for the greater portion of the year. In addition to rainfall, water levels are influenced by the storage of surface water runoff from surrounding agricultural and urban areas.

Primary canals of the Everglades Agricultural Area (Hillsboro, North Miami River and West Palm Beach canals) partially discharge to the WCAs. Indian Trail Water Control District and Acme Improvement District also discharge to the WCAs.

The S-5A, S-6, S-7, and S-8 pump stations are the largest sources of surface water inflow into the WCAs, accounting for 49 percent (SFWMD Hydrology Records) of all the surface water inflows. Looking at the WCAs individually, S-5A and S-6 stations accounted for nearly 100 percent of the total surface water inflows to WCA 1 between 1963 and 1976. The S-7 pump station contributes all of the surface water inflows entering WCA 2A from sources other than WCA 1. The water budget of the WCAs (1974-1976) consisted of approximately 57 percent rainfall and 43 percent surface water inflows.

Water quality in the WCAs is related to the water storage fluctuations. During the wet season, as water storage increases, water quality is affected by drainage of agricultural lands containing high concentrations of nutrients, pesticides, and other pollutants. Rainfall, however, tends to dilute pollutants and improve water quality. During the dry season, water quality is affected by the migration of groundwater that contains high concentrations of dissolved solids and chlorides.

~~—————~~ E. ——— Water Resources

There is a need for surface and groundwater management plans to be coordinated due to the interrelationship between surface and groundwater, as well as that between surface waters. This coordination is necessary in order to ensure 1) provision of sufficient water to maintain the functions and values provided by natural systems, and 2) the potential for population and economic growth.

Stormwater management systems often lower water table elevations for flood control purposes. While this may be desirable for the protection of lives and properties, lowering the water table often alters the hydroperiod of wetlands and threatens their viability. Drainage plans for wetland and native ecosystem areas should be specifically designed to manage the natural system. (See Conservation Element):

ORDINANCE NO. 97-49

The County's surface waters (canals, lakes, wetlands) are important features of the aquifer recharge process. Seepage from surface waters infiltrate to recharge the aquifer. This raises a concern for water quality and the use of quality-enhancing mechanisms for surface waters. (See Conservation Element).. Stormwater management systems need to be designed to maximize the quality of water

being recharged, as well as to maximize retention capability and thus, the quantity of water being recharged. Acceptable systems include those that retain the first inch of runoff or runoff from a 1-hour, 3-year storm and provide that post-development runoff is limited to pre-development volumes.

F. Localized Problems

Several subdivisions and streets in Palm Beach County have inundation problems due to inadequate drainage systems. These areas were generally developed prior to the promulgation of regulations, specifically drainage requirements. The drainage/water control districts and the County, while not necessarily responsible for these areas, are conducting investigations and, in some cases, taking action to remedy the situations.

The County contracted with the engineering firm of Post, Buckley, Schuh & Jernigan, Inc., to conduct a study of 240 square miles located in central County, east of the EAA and WCAs. The Midlands Study, included stormwater management, and investigation of the drainage situation in these areas, which generally lie in the western C-18, C-51 and Hillsboro basins. The Study recommended criteria and standards to be implemented to assure that the health and safety of area residents is adequately addressed. The County shall review the Midlands Study recommendations for incorporation into its Land Development Codes.

Floodplain areas inundated during the 100-year flood event are identified by the National Flood Insurance Program as "A" zones on Flood Insurance Rate Maps (FIRM), or Flood Hazard Boundary Maps. In Palm Beach County, these areas are generally located along the eastern perimeter of the WCAs, and in western C-51 and C-18 and Hillsboro basins, and along the West Palm Beach and L-8 Canals in the EAA. (See Map 3).

Development in these flood hazard zones is subject to regulations requiring that structures be designed and constructed to minimize flooding risks. The County's Unified Land Development Code requires that habitable building space be raised above the applicable 100-year flood elevation or otherwise "flood-proofed" by acceptable structural methods. The water control districts of the County regulate and design the flow of canals and waterways to provide certain degrees of flood protection during storm events. The County's Flood Damage Prevention Ordinance includes development standards for controlling projects that increase risks to health, safety and property from water or erosion hazards.

G. Stormwater Quality Management

Management of Stormwater quality in unincorporated Palm Beach County involves intergovernmental coordination because of the complex jurisdictional arrangement of Stormwater management facilities. As noted above, the primary manmade drainage conveyances (i.e. Classified Surface Waters of the State) are operated by the South Florida Water Management District (SFWMD) and various water control districts. Certain water control districts serving Palm Beach County operate secondary systems exclusively, or in conjunction with primary conveyance facilities. Permits issued to the water control districts by the SFWMD regulate the quality of Stormwater which these districts can discharge from their secondary systems to the primary system.

Secondary systems which provide for treatment of Stormwater prior to discharge from individual developments within the unincorporated area are approved by Palm Beach County based on compliance with SFWMD design standards. These systems, which consist of retention and detention facilities, receive permits from SFWMD which regulate the quality of Stormwater allowed to leave the property, and generally discharge into conveyance canals operated by water control districts

Unlike many of the coastal communities within Palm Beach County, the County does not provide or operate a comprehensive urban Stormwater drainage system for land within its jurisdiction. Palm Beach County itself operates Stormwater conveyances that serve the County's roadway system, which only provides for drainage of adjacent developed lands in cases of older developments, which were permitted prior to the adoption of drainage standards now contained in the County's Unified Land Development Code. New development is only allowed discharge to the roadway drainage system subject to compliance with requirements for site-specific connection permits, including provision of on-site control and treatment prior to discharge.

ORDINANCE NO.

97-49

~~The County discharges Stormwater from its roadway drainage system through 925 Stormwater outfalls and 304 major outfalls (defined as 36 inch diameter or greater) into various drainage systems [structures operated by drainage/water control districts,] and is responsible for discharges that contravene State standards set for the receiving waters. Palm Beach County has adopted a Stormwater quality management ordinance which prohibits non-Stormwater discharges to the Stormwater management system, in order to maintain the State Water Quality Standards established for the receiving waters. When monitoring of the County's discharges reveals a violation of those standards, the County's Stormwater Pollution Prevention Ordinance provides legal authority for the appropriate regulatory action to terminate the problem.~~

~~County water quality monitoring is available for use by the water control districts. When requested to do so by the districts, the County's Department of Environmental Resources Management (ERM) can perform water quality monitoring and notify the district of any problems. As Special Districts lack enforcement powers, ERM, the State Department of Environmental Protection (DEP) or the SFWMD can enforce the Stormwater quality standards.~~

~~The County and 39 other entities (including 5 water control districts subject to the federal regulations, FDOT and 33 municipalities) jointly applied for a permit through the National Pollution Discharge Elimination System (NPDES) operated by the federal Environmental Protection Agency. The NPDES Stormwater regulations require the co-permittees to assume responsibility for the quality of Stormwater entering their Stormwater management systems, and Stormwater discharging into classified waters of the state/waters of the U.S. from these systems. Standards for Stormwater quality currently exist in that Stormwater discharges to waters of the state must meet the standards set for classified water bodies (F.A.C. 62-302).~~

~~The draft NPDES Stormwater Permit issued to Palm Beach County on March 3, 1995, requires that Stormwater discharges from areas of new development, significant redevelopment and roadways shall not cause or contribute to violations of State Surface Water Quality Standards. The standards identified by the NPDES permit will be those enforced by one of the above referenced enforcement agencies (ERM, DEP or SFWMD) if called to assist a water control district.~~

~~IV. FUTURE CONDITIONS~~

~~Palm Beach County government knows that flooding does occur. Citizen complaints are evidence of this. However, there is insufficient quantifiable information available to distinguish between those flood problems due to inadequate drainage design or maintenance, and those resulting from rainfall in excess of acceptable design capacity. Upon adoption of this Sub-Element, the County shall implement a program to investigate suspected problem areas and evaluate them with respect to compliance with drainage level of service standards.~~

~~The County's primary focus is on the tertiary and on-site secondary systems associated with development. These facilities may, after investigation, be found to require additional capacity in order to meet discharge limits compatible with the essentially fixed capacity of the primary system. Capital improvements for the primary system (SFWMD) are basically limited to replacement and repair of existing structures to improve operating efficiency and reliability. Improvements can be made in localized areas, but, for the most part, capacity cannot be increased.~~

~~SFWMD reviews plans for projects covering more than 40 acres for compliance with District criteria. Non-subdivision projects of less than 40 acres, although subject to SFWMD requirements, are currently reviewed by the County, rather than the District, under the general permit provisions of District regulations. However, in the past, plan review by the County had not covered all aspects of SFWMD criteria. It is the intent of the sub-element to close the "criteria gap." The County shall adopt sub-basin level of service standards, which shall apply to all development. These standards shall be developed with the assistance of the 298 districts. The 298 districts, pursuant to Chapter 189.415, F.S., shall prepare facility reports which include analyses of existing facilities, current capacities, demands and facility improvements, expansions or construction, anticipated construction, improvement or expansion completion dates, future construction or improvements, and projected capacities of and demands on facilities. The County is responsible for completing studies in unincorporated areas lying outside drainage district boundaries. This may be accomplished through~~

ORDINANCE NO.

97-49

inter-local agreements with the 298 districts. The 6-year Capital Improvement Program contains \$100,000 for the completion of drainage facility studies.

These analyses, upon determination of consistency, shall be incorporated into the Comprehensive Plan. Prior to receipt of facility reports and adoption of sub-basin level of service standards, development shall meet the criteria presented in Policy 1-a. The Goal, Objectives and Policies of this Sub-Element apply to Development Orders subject to the Land Development Code. Level of service standards meet SFWMD criteria. Level of service standards presented here do not apply to development within the Agricultural Production Area. Implementation of these standards will fill any 'criteria gap' that may have been present in the past.

In the future, Palm Beach County will act as the facilitator for secondary-system planning through implementation of Objective 5 and its policies. Drainage systems for roads may be developed with additional capacity to accommodate runoff from adjacent lands, rather than total reliance on development taking in runoff from the adjacent road for treatment and discharge control.

Water quality in the canals is a growing issue of concern, due to the stress that is placed on the receiving waters and due to evidence that canal waters are infiltrating to recharge the aquifer system. The Conservation Element's Goal, Objectives, and Policies address surface water quality. By October, 1992, the County shall develop regulations and programs addressing preservation and protection of surface water quality subject to degradation by stormwater runoff. Additional on-site treatment, expanded monitoring of point and non-point source problem areas, and water availability, use allocation and management plans are implementation tools for achieving this objective. Canal aquatic weed control methods in the County include the use of herbicides that may contribute to the degradation of water quality. It is the intent of the County to investigate and use viable alternative methods. Other entities, also, shall be encouraged to use viable alternative methods.

Stormwater Quality

As a National Pollution Discharge Elimination System (NPDES) permit recipient, Palm Beach County will conduct required water quality testing of Stormwater for each of its major outfalls from road drainage systems over the five year life of the permit. As screening identifies any unacceptable contaminants, violations of the County's Stormwater Pollution Prevention Ordinance will be addressed through the provisions of that regulatory authority.

V. — CAPITAL IMPROVEMENTS

The County's 6-year CIP contains \$5 million allocated for the Palm Beach Stub Canal improvements and \$100,000 for drainage facility studies.

VI. — PLAN SUMMARY & RECOMMENDATIONS

Palm Beach County's drainage and surface water management needs are served by a network of fixed-capacity canals and structures. The County needs to encourage the South Florida Water Management District and the 20 independent drainage/water control districts to expand capacities where feasible. Little additional capacity is foreseen, though. The County's role is to adopt more stringent regulations to ensure maintenance of levels of service. Level of service standards shall be adopted to provide protection from flooding, to maintain stormwater runoff rates at a level compatible with capacities of receiving waters, and to mitigate degradation of water quality. Additionally, steps will be taken to preserve, protect, and restore surface water quality (See Goal, Objectives and Policies):

Little is known about the existing level of service of Palm Beach County's tertiary system. For this reason, a program needs to be initiated to inventory and assess the system, focusing on known/suspected problem areas and quantifying the information in level of service terminology. Deficiencies in the system can then be addressed. Public participation should be a major component of this program, as success can be measured by public perception of adequacy. Citizens will have to live with minor inconveniences due to major storms, but should not be forced to live with frequent flooding due to inadequate drainage.

ORDINANCE NO.

97-49

The County, through implementation of this sub-element, shall take a proactive role in drainage and

surface water management. Sub-basin facilities shall be identified and analyzed through the 298 districts. Level of service standards, based upon these studies, shall be adopted by the County and applied to all development.

Growth will be self-limited in relation to drainage/stormwater management. The County and the SFWMD are not increasing capacities or drainage availability to an extent that will encourage westward expansion. Lands without adequate drainage will be deemed unsuitable for development, unless drainage provisions are made by developers per County and SFWMD criteria.

Stormwater Quality

Following the five year monitoring period required by the NPDES permit, Palm Beach County shall evaluate the data collected during the monitoring of the outfalls owned and operated by the County. The analysis shall determine whether existing water quality standards for Stormwater discharge, defined as the State surface water quality standard for classified waters of the state, are adequate to protect water quality within the classified receiving water bodies.

Monitoring information collected by the water control districts shall be used to determine if land development regulations should be modified to require reduced discharge or improved treatment of Stormwater from areas of new urban development. In case that problem areas be identified, retrofitting may be required.

Solid Waste Sub-Element:

III. EXISTING CONDITIONS

A. Regulatory Framework

1. Federal Law

The potential environmental impacts of solid waste facilities have led to the development of an extensive network of permitting requirements at the federal and state levels. Impacts on air and water quality are reviewed by the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (DEP) and, where dredging and filling might occur, by the U.S. Army Corps of Engineers (COE). The regional water management district also provides review for water quality and quantity impacts. Actual construction and operation of solid waste facilities requires additional permits and review by the DEP. For processing plants that will generate electric power or require tall emission stacks, additional DEP and Federal Aviation Administration (FAA) review may be required.

The Resource Conservation and Recovery Act (RCRA) directed EPA to develop a national program to regulate and manage solid and hazardous waste and provide incentives for states to adopt consistent programs. Hazardous waste is regulated under Subtitle C of RCRA, solid waste under Subtitle D. The National Comprehensive Emergency Response and Compensation Liability Act (CERCLA), provided the EPA with authority and funds to respond to incidents requiring site clean-up and emergency mitigation (the EPA "Superfund" Program). RCRA and CERCLA also defined the liability of businesses engaged in hazardous waste generation, transport and disposal, and provided enforcement processes.

2. State Statutes

In 1976, the State created the Florida Resource Recovery and Management Act as authorized in Florida Statutes, Sections 403.701-403.73, with the public purpose "to enhance the beauty and quality of our environment; conserve and recycle our natural resources; prevent the spread of disease and the creation of nuisances; protect the public health, safety, and welfare; and provide a coordinated statewide resource recovery and management program."

State law mandated that 19 counties, including Palm Beach County, incorporate resource recovery as the preferred management approach when it became economically viable. Pursuant to Chapter 403, FS, the execution and enforcement is under the jurisdiction of the Florida Department of Environmental Protection as contained in Rule 62-701, FAC.

ORDINANCE NO.

97-49

On May 10, 1978, the Solid Waste Authority of Palm Beach County was designated by Governor Askew as the lead implementation planning agency responsible for solid waste management and resource recovery in Palm Beach County, pursuant to Section 4006 of Public Law 94-580, RCRA and Chapter 403.706, FS.

Since its inception, the Solid Waste Authority of Palm Beach County has made steady progress toward achievement of its legislative mandate. The Authority completed the Comprehensive Solid Waste Management and Resource Recovery Plan in 1979, as required by state statute, addressing the problems associated with solid waste management on a Countywide basis.

In addition, the Florida Resource Recovery and Management Act (Sec. 403.7, FS), passed in 1980, adopted federal guidelines and directed DER to develop and implement a hazardous waste management program. This act provided for: 1) adoption of federal hazardous waste definitions; 2) a system to monitor hazardous waste from generation to disposal; 3) an annual inventory of large hazardous waste generators; 4) permit requirements regulating treatment, storage and disposal of hazardous waste; 5) funds for hazardous waste spill and site clean-up; 6) hazardous waste management facility site selection procedures; and 7) fines and penalties for violators.

Amendments to the Florida Act in 1983 provided directions and funds to establish a cooperative hazardous waste management program between local, regional and state levels of government. These changes included provisions for county levels of hazardous waste management assessments, regional and statewide facility needs assessments, and site selection for hazardous waste management facilities at the county, region and state levels.

The Solid Waste Authority, with the Treasure Coast Regional Planning Council, by interlocal agreement, completed the Hazardous Waste Management Assessment in May, 1985.

In 1988, the Florida Legislature passed a comprehensive bill impacting solid waste management. This bill established recycling goals, prohibited landfill disposal of some special wastes, established grant programs for recycling and waste tires, and served as a legislative basis for implementing integrated solid waste management statewide. The 1988 Interlocal Agreement between the Board of County Commissioners and the Solid Waste Authority transferred the responsibilities for compliance with the 1988 Solid Waste Management Act to the Solid Waste Authority.

The State of Florida has received approval from EPA for Florida's solid and hazardous waste programs pursuant to Subtitle C and Subtitle D. This makes the State the lead regulatory agency for enforcement of these federal laws.

3. — Regional Level

The Treasure Coast Regional Planning Council (TCRPC) has developed a Regional Comprehensive Policy Plan pursuant to Chapter 186, FS, and Rule 27E-4, FAC. Goal #13 of the Plan deals with hazardous and non-hazardous materials and waste, and outlines policies the Agency will follow in addressing such issues. The Solid Waste Authority is fully aware and supportive of regional policies on solid waste.

4. — Local Level

In addition to federal, state and regional agencies, solid waste management facilities must receive local government approval to assure consistency with local land use plans and ordinances. In the Palm Beach County unincorporated areas for example, this currently includes: that such facilities be contemplated and provided for within the Comprehensive Plan; a finding of fact that the proposed facility is consistent with the Comprehensive Plan; a rezoning to and/or special exception approval within the appropriate zoning district; and site plan approval for consistency with adopted design criteria.

Palm Beach County has established a policy and mechanism for dealing with the solid waste problem on a Countywide basis and providing for an effective and long term solution. The County's far-sighted approach was the outcome of the combined and cooperative efforts of a number of concerned

ORDINANCE NO.

97-49

citizens, state and local agency officials and legislators. The culmination of these efforts was contained in draft legislation which was subsequently enacted in 1974 as the Palm Beach County Solid Waste Act, Chapter 74-564, Laws of Florida.

Under this Act, the Solid Waste Authority of Palm Beach County was established for the purpose of developing and implementing plans for an integrated Countywide solid waste management system comprised of waste reduction recycling, composting, combustion, transfer station and landfill facilities to serve the future needs of the County at reasonable cost. There have been various amendments to the original enabling legislation since 1975, with the appropriate legislative designation being, Chapter 75-473, Laws of Florida, as amended.

B. The Solid Waste Authority Mandate

Prior to the establishment of the Solid Waste Authority of Palm Beach County, governing entities in Palm Beach County were individually responsible for disposal of solid waste. While municipalities are responsible for collection within their jurisdictions, disposal and unincorporated area collection are now the responsibility of the Authority.

The Solid Waste Authority of Palm Beach County is a dependent special taxing district created by the Florida Legislature under the Palm Beach County Solid Waste Act, Chapter 75-473, Laws of Florida, as amended.

Under this Act, the Solid Waste Authority of Palm Beach County was established for the purpose of developing and implementing plans for an integrated Countywide solid waste management system comprised of recycling, resource recovery, transfer station and landfill facilities designed to serve the future needs of the County at reasonable cost. The Act gives the Authority the power to construct and operate solid waste disposal facilities, including resource recovery facilities and to require that all solid waste collected by private and/or public agencies within the County be delivered to processing and disposal facilities designated by the Authority.

In addition, no person shall operate, maintain, construct, expand or modify any waste management facility without first having received a valid operating permit from the Authority. Failure to obtain this permit, operating in violation of any resolutions, rules or orders adopted by the Authority, or collection of solid waste in violation of exclusive franchises are enforceable under Ordinance 94-26 (Environmental Control Ordinance).

The Authority has undertaken numerous studies to integrate a Countywide solid waste management program and to determine the technical, economic, institutional and environmental considerations that need to be addressed with respect to recycling, resource and energy recovery, transfer stations and land disposal facilities.

The following table summarizes Solid Waste Authority designated solid waste facilities serving Palm Beach County as of January 1995. Sludge disposal sites are managed pursuant to waste water regulations and are not included in the designation of solid waste disposal sites. Locations of transfer stations reflect the ultimate siting location, or the result of annexation of Authority facilities into municipalities. Capacities of transfer stations reflect design capacities, which provide some flexibility to accommodate peak waste flow days. Closed facilities do not provide capacity to the system, and are not included.

TABLE 1
SOLID WASTE FACILITIES STATUS
PALM BEACH COUNTY

DISPOSAL FACILITIES OWNER/OPERATOR	LOCATION	WASTE	ACRES- TYPE	LIFE	STATUS
Authority	West Palm Beach	Mixed	334.0	—	Active
Town of Palm Beach	Unincorporated	Vegetative	28.0	20+	Active**
Town of Palm Beach	Unincorporated	Vegetative	5.0	20+	Active**

ORDINANCE NO.

97-49

Lake Worth Drainage District Unincorporated Vegetative -20.0 20+ Active**

* It is projected that the capacity of the landfill will be consumed by approximately the year 2020.

** These facilities do not serve the unincorporated area; however, they are located within the unincorporated area.

TABLE 1
SOLID WASTE FACILITIES STATUS
PALM BEACH COUNTY
(Continued)

TRANSFER STATIONS OWNER/OPERATOR	LOCATION	DESIGN CAPACITY	STATUS
Authority	Belle Glade	200 tons/day	Active
Authority	Lantana	1000 tons/day	Active
Authority	Delray Beach	1000 tons/day	Active
Authority	Royal Palm Beach	1200 tons/day	Active
Authority	Jupiter	1200 tons/day	Active
Authority	South West County	1000 tons/day	Proposed
Town of Palm Beach	Palm Beach	40 tons/day**	Active

** Serves Palm Beach collection vehicles only.

C. Hazardous Waste

In addition to the solid waste generated by residents and places of business in Palm Beach County, the Solid Waste Authority has become involved in the planning for and proper management of hazardous waste. Hazardous waste cannot be disposed of in the County, but must be correctly handled to assure that it does reach a federally qualified hazardous waste disposal facility.

In 1984, the Laws of Florida declared it to be the intent of the Legislature that the regional planning councils provide a coordinated Countywide program for the management of Small Quantity Generator (SQG) hazardous waste. As a result of these laws, the Authority, under contract to the Treasure Coast Regional Planning Council, performed three functions: 1) Local Hazardous Waste Management Assessment, 2) SQG Notification Program, and 3) Countywide Hazardous Waste Storage Facility Area Designations. The Authority began a comprehensive, Countywide inventory of small quantity generator hazardous waste producers in mid-1984, directed by provisions in Florida's Water Quality Assurance Act of 1983. In July of 1985, tasks 1 & 2 were completed and revealed approximately 1,020 small hazardous waste generators in Palm Beach County.

On May 15, 1985, the Authority accepted the designation of two Authority sites as potential hazardous temporary waste storage/transfer facility locations. These sites are: 1) Belle Glade Transfer Station, and 2) North County Regional Resource Recovery Facility. This fulfilled the third function of the program.

D. Household and Small Quantity Generator Hazardous Waste Collection

1. Authority Approach

The Solid Waste Authority has implemented programs to accept Household Hazardous Waste (HHW) at no cost to the resident, and Conditionally Exempt Small Quantity Generators (CESQG) waste with the generator paying the cost of disposal. HHW is now collected at the Central facility on the North County Resource Recovery facility site, and periodically at the transfer stations. CESQG waste is accepted from generators who register with the Authority, pursuant to SWA Rule H.

2. Ordinance 87-22 - Public Health Unit Approach

ORDINANCE NO. 97-49

In 1987 the PBC Public Health Unit (PBCPHU) enacted Ordinance 87-22 to regulate small hazardous waste generators. All hazardous waste generators are inspected by the PBCPHU for compliance with State and federal regulations, and are regulated through a licensing and enforcement program. The PBCPHU also revised the Palm Beach County Environmental Control Rule I to prohibit disposal of hazardous waste into a septic tank system.

E. Recycling and Waste Reduction Activities

Part of the Solid Waste Authority's solid waste management program is waste reduction; that is, reducing the amount of refuse sent to the landfills. The 1988 Solid Waste Management Act established a state-wide goal of 30% recycling, with specific goals of 50% recycling of ferrous, aluminum, glass and plastic containers, and newsprint. The Authority has implemented collection and processing programs to meet, and ultimately exceed the goals established by the State. In addition to these five materials, the Authority's residential collection programs currently include aseptic packaging, magazines, corrugated cardboard gable-top containers (milk, juice, etc.), and other aluminum products. Commercial Recycling programs include office paper and corrugated cardboard, plus the same materials as the residential programs. Special waste recycling includes materials such as yard waste, construction/demolition debris, tires, white goods and used oil. This is not an exhaustive list of materials, nor will the program be limited to only these materials. As markets are developed that assure that the materials recovered are recyclable, they may be added to the recycling programs.

Beyond the state-wide recycling goal, the Solid Waste Authority has established a goal of reducing the quantity of waste being delivered for combustion or landfill by 50%, by the year 1998, using the waste quantities of 1988 as the baseline. Table 2 shows the progress of Palm Beach County toward achieving the recycling and waste reduction goals.

TABLE 2
PROGRESS OF RECYCLING ACTIVITY IN PALM BEACH COUNTY
JULY 1989 THROUGH JUNE 1994(1)

(2) YEAR	(3) DEP (%)	(4) TONS	(5) SWA (%)	(6) TONS	(7) TOTAL
88/89	4.8	61,403	4.8	61,403	1,286,643
89/90	12.1	151,903	12.1	151,903	1,259,488
90/91	26.2	371,171	33.3	472,888	1,418,744
91/92	27.9	378,062	27.9	378,062	1,354,026
92/93	24.7	400,316	39.8	644,687	1,620,713
93/94	27.9	506,247	45.5	826,342	1,816,458

- NOTES:
1. Numbers are, as reported to DEP in Palm Beach County's Recycling and Education Grant Applications.
 2. DEP fiscal year: July 1 through June 30.
 3. Adjusted DEP recycling rate applied toward 30% goal. Allows only 15% of special waste recycling.
 4. Recycled tons corresponding to adjusted rate.
 5. Unadjusted recycling rate applied toward Solid Waste Authority's 1998 50% goal. Includes all special waste recycling.
 6. Recycled tons corresponding to unadjusted rate.
 7. Total MSW reported for the year. Includes materials not handled by Authority facilities.

Recycling reduces the amount of waste brought into landfills and thereby reduces the amount of land needed for landfilling. The space saved extends the life of these facilities, postponing the need to expand new facilities. The Authority anticipates that by increasing the recycling of waste, the environmental impact associated with landfilling, illegal dumping and littering will be reduced.

F. Analysis of Existing Conditions

The Solid Waste Management Plan was based on an analysis of the existing demand on the solid waste system and the existing conditions in the County that produced such demand.

ORDINANCE NO. 97-49

The facility analysis contained in the Plan is based upon the geographic service areas of the facilities served by Authority-operated facilities; and not upon municipal and unincorporated areas. As points of information, there are no municipally operated solid waste facilities serving the unincorporated area, while all but one of the Authority-operated facilities are located in municipalities.

The existing capacity analysis includes the capacity of existing facilities and the ability of those facilities to accommodate the waste generated from existing population and non-residential generators as well as additional waste generators to be approved based on the medium population projection of the University of Florida Bureau of Economic and Business Research. The transfer station network, when completed, should provide sufficient transport capacity to serve the areas of the county in which they are located. The utilization of surplus capacity and the remedy of facility capacity deficiencies are integrated with, and addressed through, the 1995 and 2010 capacity analyses and resulting facility needs.

IV. FUTURE CONDITIONS

A. Projecting Waste Flow

To calculate the amount of solid waste to be disposed at Authority facilities and, therefore, the projected facilities requirements, population projections, per capita generation rates, and historical records are used. This data is compiled and entered into the Authority's Landfill Depletion Model. The Authority uses the University of Florida Bureau of Economic and Business Research medium population projections as the basis for population growth in all waste flow projections.

For the 1994 year, the Authority received 1,120,195 tons of MSW and 101,475 tons of recyclables for a total of 1,221,670 tons. The population of Palm Beach County was estimated at 939,119. The per capita solid waste generation rate is estimated at 7.13 pounds per day. A breakdown of incoming waste by classification according to Authority scale data is presented in Table 3.

TABLE 3
WASTE GENERATION UNIT RATES
(POUNDS PER CAPITA PER DAY)

Classification	Pounds
Garbage	4.28
Trash	.96
Vegetation	.55
Land Clearing and Building Debris	.29
Sludge and Dewatered Sludge	.26
Clean Fill	.16
Tires	.02
Miscellaneous	.02
Subtotal MSW	6.54
Recyclables (From Garbage Class)	.59
Total	7.13

Historically, the per capita generation of solid waste in this country had increased at the rate of three to four percent per year throughout the 1960s and 1970s. This historical increase was a result of greater use of packaging materials and disposable products, coupled with a rise in the standard of living.

This increase has slowed considerably as a result of increased awareness and concern for recycling and reuse of solid waste as well as improved markets for recovered materials, providing increased economic incentives. The increased cost of raw materials and the resulting incentive to increase the volume of recovered materials coupled with the occasional energy savings from recovered materials will probably encourage more recycling and source reduction.

ORDINANCE NO.

97-49

In addition to the elements listed above which are slowing the increase in the per capita generation of solid waste, the Solid Waste Authority has adopted a 50% reduction goal to be achieved by 1998 and has launched a source reduction program to reduce the generation of solid waste.

The strongest evidence in support of the stabilization of waste generation rates is the per capita rate calculated by the Authority based on waste delivered. The 1986 per capita rate was 7.1 pounds. The 1994 rate was 7.13 pounds, a total increase of only 0.4 percent in eight years.

It is reasonable to assume that the factors that tend to increase solid waste generation will be offset to some extent by the factors that tend to decrease solid waste generation and that solid waste generation rates will remain fairly stable through the foreseeable future. Since other economic and legislative changes over the next several decades cannot be foreseen, stable waste generation rates are a valid planning assumption. This is particularly true in light of the fact that the Authority performs an annual review of waste generation and capacity consumption when the landfill depletion model is updated. Any substantive change in waste generation rates can be detected, and its potential impact evaluated, long before the disposal capacity of the system is significantly impacted.

Therefore, the evaluation of disposal capacity needs for the county are based on the assumption that the vast majority of demand for additional disposal capacity for Palm Beach County will be due to increases in population rather than increases in per capita generation rates. Using the above waste generation rates, a projected total amount of solid waste to be disposed at Authority facilities for the years 1995 through 2020 was computed and is presented in Table 4.

It is important to note that the per capita waste generation rate and the wasteflow projections derived from them are used for long range planning purposes only and not for billing purposes. The Authority performs periodic commercial and residential waste generation studies to determine the waste generation characteristics of residential property in tons per year and of commercial property in pounds per square foot per year. These generation studies, performed approximately every five years, form the basis of the Authority's Assessment Billing Program.

TABLE 4
ESTIMATED SOLID WASTE QUANTITIES
BY CLASSIFICATION
(TONS/YEAR)

Year	Estimated Population	Garbage 4.87	Trash 0.96	Vegetative Debris 0.55	Land Building 0.29	Sludge 0.26	Clean-Fill 0.16	Fires 0.02	Misc. 0.02	Total 7.13
1995	960,600	853,757	168,297	96,420	50,840	45,580	28,050	3,506	3,506	1,249,957
2000	1,074,800	955,255	188,305	107,883	56,884	50,999	31,384	3,923	3,923	1,398,557
2005	1,185,000	1,053,198	207,612	118,944	62,716	56,228	34,602	4,325	4,325	1,541,952
2010	1,293,000	1,149,186	226,534	129,785	68,432	61,353	37,756	4,719	4,719	1,682,484
2015	1,401,500	1,245,618	245,543	140,676	74,174	66,501	40,924	5,115	5,115	1,823,667
2020	1,507,900	1,340,184	264,184	151,355	79,806	71,550	44,031	5,504	5,504	1,962,117

SOURCE: Solid Waste Authority of Palm Beach County

B. Analysis

The Solid Waste Authority considers the foregoing projections and analyzes alternatives in the preparation and update of the Solid Waste Management Plan and in the preparation and update of the Landfill Depletion Model. The Solid Waste Management Plan includes an analysis of the County's solid waste facilities capacity.

The disposal system for Palm Beach County has capacity to the year 2020. This is sufficient to meet the five and ten year planning time frame requirements of 9J-5.005(4). This design disposal capacity is based on the existing permitted capacity remaining, the projected increases in waste generation shown in Table 4, and the utilization of the available processing capacity for recycling, composting, combustion and waste reduction.

ORDINANCE NO. 97-49

The disposal capacity of the system will be evaluated annually using the Landfill Depletion Model. The amount of available capacity, combined with a regular review of remaining capacity and population growth, enables the Authority to initiate policy and planning activities for replacement capacity at a future date. Presently, it appears those activities could be initiated in the 2010 - 2015 time frame, depending on the alternatives pursued.

In addition to the plans and facilities of the Solid Waste Authority, action has been taken by Palm Beach County to facilitate safe management of solid and hazardous wastes. On September 20, 1988, the Board of County Commissioners entered into an interlocal agreement with the Solid Waste Authority for the purpose of transferring programs relating to solid waste management. Some of the programs and responsibilities of the Solid Waste Authority include:

1. The powers and duties to establish a mandatory collection system for solid waste and to impose reasonable rates, fees and charges to all users of said system;
2. The powers and duties to grant franchises, contracts, issue permits or otherwise provide for the collection of solid waste in Palm Beach County and establish reasonable rates, fees and charges;
3. The powers and duties to carry out the responsibilities and programs for the determination of the full costs of solid waste management and solid waste management fees, and to coordinate the same with municipalities in Palm Beach County as more specifically set out in Section 403.7049, FS, (1988);
4. To cooperate, coordinate and communicate on behalf of Palm Beach County with the Florida Department of Environmental Protection and other applicable departments in the development and/or implementation of the state solid waste management program as more specifically set out in Section 403.705, FS, (1988);
5. To carry out the local government solid waste responsibilities on behalf of Palm Beach County regarding disposal facilities and recycling programs as more specifically set out in Section 403.706, FS, (1988);
6. To apply for and receive solid waste management grants from the State of Florida to assist in the development and operation of recycling programs and education programs to carry out the requirements of recycling as appropriate to take advantage of and fulfill the provisions of Sections 403.709 and 403.7095, FS, (1988);
7. To seek and obtain financing, if necessary, regarding solid waste management facilities as more specifically set out in Section 403.712, FS, (1988);
8. To avail itself of the provisions of Section 403.713, FS, regarding the collection, separation, transportation and/or disposal of solid waste within Palm Beach County;
9. To develop programs and apply for and receive grants from the State of Florida on behalf of Palm Beach County to encourage the collection, re-use and proper disposal of used oil as such grants are provided for in Section 403.763, FS, (1988);
10. To develop programs and apply for and receive grants on behalf of Palm Beach County for the collection, processing and disposal of waste tires as such grants are provided for in Section 403.719, FS (1988), tentative designation;

V. THE SOLID WASTE MANAGEMENT PLAN

The Solid Waste Management Plan provides for an integrated solid waste management system which includes a resource recovery facility and attendant landfills; a materials recycling facility; a sludge compost facility; a series of six transfer stations; related haul vehicles; and ancillary facilities including an administration building, a maintenance building, a household hazardous waste building, and

ORDINANCE NO.

97-49

associated service facilities.

The Authority's disposal facilities are located at The North County Resource Recovery Facility Site, bordered on the north by the Beeline Highway, on the east by Florida's Turnpike, on the south by a line approximately 600 feet south of 45th Street, and on the west by the City of West Palm Beach Water Catchment Area.

The North County Resource Recovery Facility itself occupies approximately 40 acres of the site. The design capacity of the facility is 2,000 tons per day and is designed to be expandable to 3,000 tons per day. The North County Regional Solid Waste Disposal Facility (NCRSWDF) occupies approximately 334 acres of the site and consists of a Class 1 (Garbage and Incinerator Residue) and a Class 3 (Trash) landfill, which are projected to be capable of providing disposal capacity through approximately the year 2020. Additional facilities include the Materials Recycling Facility, with a design capacity of 500 tons per day, the ferrous processing facility, with a design capacity of >35,000 gross tons per year, and a sludge compost facility, with a capacity of 60,000 tons of yardwaste mulch and 60,000 tons of dewatered sludge annually, and a Household Hazardous Waste facility. A conservation/retention area occupies the western portion of the site.

The Plan also includes provisions for additional disposal capacity to replace the existing capacity upon depletion, which is projected to occur in approximately the year 2020. The plan calls for a regular evaluation of the remaining system capacity, using the Landfill Depletion Model. The amount of remaining capacity (in years) can be used as a basis for initiating the steps to develop or implement replacement capacity. Typically, it may take up to 10 years to site, acquire permit, and develop replacement disposal facilities. If a piece of property has been acquired, permitting and development can take up to 5 years, depending on the specifics of the site.

The plan serves as a basis for initiating this process at the appropriate time. The regular review of remaining capacity assures that this process can be initiated in sufficient time to provide replacement capacity. The initiation of these activities will be determined by the remaining life of the disposal facility.

J:\COMMON\PLANNING\CURRENT\AMEND\97-2\BCCADPT\ORDINANC\UTILITY.EXH

ORDINANCE NO.

97-49

C. **Recreation and Open Space Element** EAR Based revisions, additions, and deletions.

1. **REVISED INTRODUCTION**

Palm Beach County's 2,023 square miles makes it one of the largest counties in the State of Florida and in fact larger than the State of Rhode Island. With a population of nearly one million people residing mostly in the eastern half of the Palm Beach County, it is the third most populous county in Florida. The County continues to be one of the fastest growing counties in the State and to attract more than three million visitors annually. Thus, the County's size along with the diversity of its growing populace generate myriad recreation and open space needs that are served by the County's recreation and open space system.

Fortunately, Palm Beach County encompasses many significant natural resources such as eastern Lake Okeechobee, vast federal and state conservation and/or wildlife areas, the Loxahatchee River and Slough, the Intracoastal Waterway, and some of the finest Atlantic Ocean beaches in the State of Florida, all within an hour drive of the County's population. These resources along with the County's 7,000 acres of parks and more than 25,000 acres of environmentally sensitive lands, other municipal park systems, and County School District facilities provide public access opportunities to an array of natural, cultural and recreational facilities. In addition, privately owned or operated facilities such as golf courses, clubhouses, pools, marinas, and campgrounds are available throughout the County albeit in some cases on a more limited basis than public facilities. Together these resources comprise a broad based and functional Countywide recreation and open space system that contributes to the health and welfare of the population, links vital natural resources, and supports a high quality of life for Palm Beach County residents.

The Recreation and Open Space Element guides the County's capital program designed to meet the increased demand for parks, beaches, recreational facilities, and open space necessary to serve new development and to maintain the quality of life enjoyed by existing residents. To accomplish this goal additional parks and recreation facilities will be provided commensurately with future population growth, existing deficiencies will be addressed with available funds, accessibility will be increased to the many components of the recreation and open space system, and additional environmentally sensitive lands will be acquired and/or protected. Unless otherwise indicated, the Palm Beach County Parks and Recreation Department is responsible for implementation of the Goal, Objectives, and Policies of this Element.

This 1997 version of the ROSE supersedes the 1989 Element in its entirety and incorporates the 1995 EAR based amendments. As a result of these amendments, much of the supporting data and tables formerly contained in the 1989 Element are now located in the accompanying Support Document, resulting in a reorganized ROSE that is more concise and easier to follow than the 1989 Element.

A. **Purpose**

The purpose of the Recreation and Open Space Element is to ensure that the County adopts a long-range plan necessary to provide an adequate Countywide system of parks, recreational facilities and open space to serve existing and future populations. The Recreation and Open Space Element (ROSE) provides the Goals, Objectives and Policies (GOP) necessary for establishing Concurrency Level of Service Standards (LOS) and other important planning guidelines to ensure that an adequate system of parks, recreational facilities and open space is available for County residents both now and in the future.

The ROSE satisfies the minimum criteria for State review established by the Department of Community Affairs under Chapter 9J-5, Florida Administrative Code, as amended. Specifically, Rule 9-J5.014 Recreation and Open Space, and Rule 9-J5.005 Concurrency Management call for the adoption and monitoring of LOS Standards to ensure that issuance of new development orders and permits does not result in a reduction of Park and Recreational facilities LOS below adopted County standards.

ORDINANCE NO. 97-49

Community involvement and public input have been an integral part of the ROSE's development, a major portion of which was accomplished during the 1995 EAR process. The EAR-Based corrective actions included within this Element and its Support Documents are those required by Rule 9J-5.0053 Evaluation and Appraisal Reports and Evaluation and Appraisal Amendments. The public review process used to adopt the amended ROSE complies with other general Comprehensive Plan requirements found under Rule 9J-5.004 Public Participation.

B. Assessment & Conclusions

Palm Beach County has traditionally assumed responsibility for providing a portion of the overall parks, recreational facility, and open space needs for both County residents and visitors. The County continues to place major emphasis on acquisition and development of larger scale Regional, Beach and District Parks that are the most cost efficient to build and operate, and that provide the greatest and most diverse active and passive recreational opportunities for all County residents. To a lesser extent smaller scale community and/or neighborhood parks that have more limited active recreational facilities are provided only in urban areas where limiting conditions preclude larger park facilities. State and federal conservation areas and waterways, along with the County's environmentally sensitive land acquisitions account for most of the open space resources.

The single GOAL of the ROSE, although slightly altered from the 1989 Element, remains essentially the same: to provide a Countywide system of parks recreation facilities and open space to serve existing and future residents. The objectives of the ROSE are grouped into three main policy areas and prioritized as follows based Countywide and community needs and future commitments for funding :

Objectives 1.1 Long Range Planning and Funding, & 1.2 Concurrency Levels of Service Standards. These objectives and policies address specific 9J-5 requirements and contain the highest priority commitments and measurements of the Plan's effectiveness, providing for the evaluation and oversight of the planning process, annual funding commitment and adoption of Countywide Concurrency LOS standards.

Objectives 1.3 Community Parks, & 1.4 Open Space These two objectives set forth general planning policies that address the strong community interests in Community Parks and Open Space lands for which there may be current funding but no long term recurring dedicated capital funding source nor Concurrency LOS established.

Objectives 1.5 Recreational & Cultural Opportunities, & 1.6 Intergovernmental Coordination. These objectives provide guidelines for those desirable programs that increase recreational and cultural opportunities, and help establish mutually beneficial partnerships with other public or private agencies involved in the delivery of similar recreational and open space services. In most cases there are no direct annual funding commitments made by the Board for these programs.

The ROSE includes *MAP 1, Existing Conditions Map (1995)* and *MAP 2, Future Conditions Map (1996-2015)*, both of which are updated to reflect the addition of new parks at the time of the EAR and those additional County parks proposed between the years 1996 - 2015. The maps are now produced in color, and include descriptive legends and tables of existing and projected future inventories of parks, acreage, and recreational facilities.

In summary, the County's primary role will continue to be the provision of Regional, Beach and District Parks and related active and passive recreational facilities to serve existing residents and growth related needs in the future. Community Parks and/or neighborhood facilities that address existing deficiencies will also be considered in targeted regions of the urban service area on a case by case basis as available funding permits.

The Goal, Objectives and Policies of this Element are intended to provide clear guidelines for the planning and implementation of a capital program to meet future park, recreation and

ORDINANCE NO.

97-49

open space needs and maintain the high quality of life in Palm Beach County. Specifically, additional acres of regional, beach and district parks with their associated active and passive recreational facilities will be planned to best serve areas where continued population growth is projected. This will be accomplished through the establishment of concurrency levels of service, and the collection and allocation of park impact fees from new residential development.

Second, those areas with existing park and/or active and special recreational facilities deficiencies will be addressed on an individual basis as funding becomes available from ad valorem, bond, grant or other non-impact fee funding sources. Recent funds approved by the Board of County Commissioners include the 1995 \$25.3 Million Park Revenue Bond and \$1.4 Million Annual Recreation Assistance Program that provide funding for municipal and other local park projects. These two sources represent a substantial commitment of funds by the County for projects to help meet existing deficiencies.

And finally, the County's 1991 \$100 Million Environmentally Sensitive Lands Acquisition General Obligation Bond Program resulting in the purchase of thousands of acres of native habitat area since the Element's adoption in 1989, offers new opportunities for nonconsumptive passive recreational opportunities. In conjunction with other public recreation and conservation lands these ESL acquisitions will form the core of a linked open space system throughout the County and region. The need to increase public accessibility to recreational and open space resources will be addressed by developing partnerships and cooperative agreements with schools, local, state and federal agencies, nonprofit groups and other public and private providers of recreational and cultural facilities.

Palm Beach County is fortunate that virtually all of its population centers lie within close proximity to at least one significant natural resource area. These areas include Lake Okeechobee, the Conservation Areas, the Intracoastal Waterway, the Loxahatchee River and Slough, and some of the finest Atlantic Ocean beaches in the State of Florida. These natural resources, along with almost 6,000 acres of County parks, provide recreational opportunities for County residents and tourists. They also provide the framework for a recreation and open space system that links and sustains the urban areas.

In order to maintain or enhance the quality of life in the future, the County will help meet the increasing demand for additional parks, beaches, recreational facilities and open space resulting from new development and the accompanying growth in population. This will be accomplished by providing a portion of the new parks and recreation facilities needed in the future, by increasing the accessibility to open space areas or corridors, and by protecting important conservation lands from development so that a functional recreation and open space system may be integrated within the County's urbanized areas.

The Recreation and Open Space Element, prepared pursuant to Chapter 163, F.S., 9J-5.014, F.A.C., seeks to help meet these identified demands and needs. The main objectives of the Element are to help satisfy needs in areas with existing deficiencies and in areas where population growth is rapidly occurring. The policies recommended as a part of this Element will provide clear guidelines for programs which will be undertaken to help meet the future park, recreation and open space needs.

A. Purpose

The first purpose of the Recreation and Open Space Element for Palm Beach County is to maintain parks, beaches, recreational facilities and open space at an acceptable level of service now and in the future. There is also a need to provide a better distribution of parks and recreational facilities throughout the County, especially in the rapidly developing fringe areas between the municipalities and the unincorporated areas.

Finally, many existing park sites remain undeveloped or only partially developed. Development of these parks to their full potential may enhance the distribution of a variety of recreational facilities for the public's enjoyment. Increasing the accessibility to publicly owned conservation areas and open spaces will also enhance the future availability of recreational opportunities. The augmentation of the existing recreation and open space

Table 1.2 below lists the recommended Countywide standards for recreational facilities in terms of the number of facilities required to satisfy the demand for a given amount of population.

TABLE 1.2

RECOMMENDED COUNTYWIDE RECREATIONAL FACILITY STANDARDS

Facility	Standard (Unit/Pop.)	User Guideline	Turnover Day
Special			
Marina	1 slip/2,000	4/day	1
Boating	1 ramp/10,000	160/day	40
Golf Course	9 holes/25,000	240/day	60
25 Meter Pool	1 pool/25,000	389/day	2
Active			
Tennis	1 court/4,000	24/day	8
Basketball	1 court/4,000	72/day	6
L.L. Baseball	1 field/6,000	100/day	5
Sr. Baseball	1 field/12,000	100/day	5
Adult Softball	1 field/12,000	100/day	5
Football/Soccer	1 field/8,000	140/day	5
Exercise Trail	10 station/10,000	200/day	20
Handball/Racquetball	1 court/6,000	32/day	12
Playground	1 area/3,000	160/day	8
Volleyball	1 court/6,000	144/day	8
Passive			
Camping	1 acre/10,000	48/acre	1
Picnicking	1 acre/6,000	160/acre	2
Fishing (non-boat)	1 site/5,000	1/6 feet	2
Hiking/Nature Trail	1 mile/10,000	125/mile	10
Bicycling	1 mile/10,000	260/mile	10
Horseback Riding	1 mile/20,000	80/mile	8

Source: Needs Assessment Study 1985.
Outdoor Recreation in Florida 1987. DNR.
Regional Comprehensive Development Plan APB 1976

The resident population of Palm Beach County continues to grow rapidly, further increasing the demand and need for all types of parks, recreational facilities and open space. Table 2 lists Palm Beach County's projected population from 1985 through buildout including the percent of Countywide population expected to reside in the four park districts, illustrated on Map 1.

TABLE 2
COUNTYWIDE POPULATION AND PARK DISTRICTS
BY PERCENT OF TOTAL (1985 - BUILDOUT)

Year	Total	Park Districts			
		North	Central	South	Glades
1985	734,900	18%	46%	30%	5%
1988	870,933	19%	45%	31%	4%
1995	1,059,376	20%	44%	32%	4%
2010+	1,434,984	26%	43%	30%	3%
Buildout	1,569,010	27%	42%	29%	3%

SOURCE: + Palm Beach County Parks Department, 1989
- Metropolitan Planning Organization/Palm Beach County Planning Division, 1989.

ORDINANCE NO. 97-49

C. Summary of Principal Findings

Palm Beach County has assumed responsibility for providing a portion of the parks and recreational facilities for all County residents and visitors based upon the findings of its "Needs Assessment Study, 1985". The study identifies the park and recreational facility demands and makes general recommendations for the County to meet its respective portion of the total future demand for these facilities. The County's respective portion is that part which no other supplier is reasonably able to provide according to historic patterns of recreation supply in Palm Beach County.

Another recommendation of the "Needs Assessment Study, 1985" is major emphasis on acquisition and development of Regional and Beach Parks, which provide the greatest and most diverse passive recreational opportunities for all County residents. District and Community Parks, on the other hand, are viewed as playing a major role in providing for active recreational opportunities in close proximity to urban service areas.

Municipalities in Palm Beach County provide a varying amount of recreation and open space. Most municipalities provide Neighborhood and Community Parks. A few of the larger cities provide District and Beach Parks as well. State and federal agencies, on the other end of the spectrum, have provided much of the supply of open space through large conservation areas, nature preserves, and in some cases, beaches or special facilities. All of these suppliers individually provide a level of service the summation of which contributes to meeting the Countywide Park and Recreation Standards.

An abundance of private cultural and recreational facilities also exists in Palm Beach County. Private recreational facilities are primarily amenities to residential communities that include a multitude of golf-course oriented country clubs, community clubhouses/pools and neighborhood recreation areas too numerous to inventory. These private recreational suppliers also contribute to meeting the Countywide Park and Recreation Standards.

Thus, the County will have to continue to meet much of the Regional, Beach and District Park needs in the future, as well as providing Community Parks in urban service areas. The following Tables, 3.1 and 3.2, illustrate the County's respective percentage of total demand responsibility, or adopted levels of service, to be met by buildout. The buildout level of service represents the full percent of total demand for which the County has taken responsibility. The intermediate years represent the schedule by which the full percentage will be met and a timetable for eliminating existing deficits. In the interim years, between the target years of 1995, 2010 and buildout, the minimum level of service shall be established at the lower of either the existing L.O.S. or the adopted L.O.S. of the targeted years.

TABLE 3.1
PARK CLASS DEMAND AND
ADOPTED LEVELS OF SERVICE
AS A PERCENTAGE OF COUNTYWIDE STANDARD

Park Class	% Demand	Percent of Total		
	Satisfied	Acreage Demand to be met		
	in 1985	1995	2010	Buildout
Neighborhood	0	0	0	0
Community	14	15	20	25
District	26	25	40	50
Regional	61	65	75	75
Beach	71	72	72	72

SOURCES: Needs Assessment Study, Palm Beach County Parks and Recreation Department, 1985 and Parks and Recreation Department, 1989.

ORDINANCE NO.

97-49

TABLE 3.2

**RECREATION FACILITY DEMAND AND
ADOPTED LEVELS OF SERVICE**

Park Class	% Demand		% of Total Demand to be Met	
	Satisfied in 1985	1995	2010	B-Out
Special Facility				
Marina (Boat Slips)	6	10	10	10
Boat Ramps	23	20	23	25
Golf Course (9-hole)	0	10	18	25
25 Meter Pool	10	10	12	15
Active Facility				
Tennis Court	16	20	22	25
Basketball Court	9	10	18	25
L.L. Baseball Field	16	20	22	25
Mjr.L. Baseball Field	17	20	22	25
Softball Field	22	22	24	25
Football/Soccer Field	22	22	24	25
Exercise Trl. (10 sta.)	18	20	24	25
Handball/Racquetball	24	22	24	25
Play Area	14	17	20	25
Volleyball Court	3	17	20	25
Passive Facility				
Camping (Acres)	60	60	70	75
Picnicking (Acres)	62	68	72	75
Fishing (Sites)	12	20	40	50
Hiking/Nature Trl. (miles)	16	20	40	50
Bicycling Trail (miles)	16	20	20	25
Horse Riding Trl. (miles)	27	30	40	50

**2. REVISED GOAL 1: PROVISION OF PARKS, RECREATIONAL FACILITIES
& OPEN SPACE**

It is the goal GOAL of Palm Beach County to provide a Countywide system of parks, beaches, open space, and recreational and cultural facilities, that are conveniently distributed, readily accessible, and adequate in number and open space to assure minimum adopted levels of service (LOS), to meet to serve current and future needs of the County's population, and to ensure increased accessibility with a more even distribution to the Countywide recreation and open space system for both residents and tourists. This Goal will be achieved through the implementation of the following Objectives and Policies.

**3. REVISED Objective 1.1 Implementation Long-Range Planning and Funding
[9J-5.014(3)(b)3]**

Palm Beach County shall establish a comprehensive program including a 6-Year Capital Improvement Plan to ensure minimum adopted levels of service for parks, recreation facilities and open space, are maintained and that allows increased accessibility above current levels of service with a more even distribution and supply of parks, recreational facilities, and open space in place throughout the County by January, 1995, for the enjoyment of all residents and visitors:

Palm Beach County shall maintain a long-range plan to guide development of its recreation and open space system including a planning process that encourages public input, adoption of a 6-Year Capital Improvement Plan, and annual funding that ensures adequate recreational opportunities are available to the public on a Countywide basis.

ORDINANCE NO.

97-49

4. **DELETED Policy 1-a:** The County shall adopt, and incorporate as part of this Element, the "Parks and Recreation Department Needs Assessment Study, 1985" and the "\$175-Million Ten-Year Plan, 1986-1995", and shall update these studies at a minimum of five-year intervals.
5. **REVISED Policy 1-b 1.1-a:** The County shall develop a Countywide park map to identify generalized locations for new Regional, District, Community and Beach Park sites for future acquisition purposes by October, 1990, with provisions for updates at a minimum of two-year maintain, and incorporate as part of this Element. Map 1, Existing Conditions (1995) and Map 2, Future Conditions (1996 - 2015) identifying existing and future locations and recreational facilities available for each of the County's Regional, Beach, District and Community Parks. The Maps and their respective supporting data will be assessed and updated at intervals consistent with the Evaluation and Appraisal Reporting process, as stipulated by Rule 9J-5, Florida Administrative Code, or more frequently as necessary to reflect changing conditions.
6. **DELETED Policy 1-c:** The County shall adopt minimum levels of service for Regional, District and Beach parks and open space as a percentage of the recommended Countywide Standards to be attained by years 1995, 2010, and Buildout as shown in Tables 4, 5 and 5.1.
7. **DELETED Policy 1-d:** The County shall establish interim levels of service for the purpose of concurrency management at the lower of either the existing L.O.S. or the 1995 adopted L.O.S.
8. **DELETED Policy 1-e:** The County shall review the 6-Year Capital Improvement Program annually to ensure that adopted Levels of Service as outlined are attained.
9. **REVISED Policy 1-f 1.1-b:** The County's park planning process shall encourage public participation and comment in the park planning process through local public hearings and user surveys that help assess local and Countywide recreational needs of its residents.
10. **NEW Policy 1.1-c:** The recommendations of Citizen Advisory Groups and/or Review Committees as may be established or sanctioned from time to time by the Board of County Commissioners will be considered in the appropriate stages of the recreation and open space planning process. These groups and committees currently include but are not limited to the following:
 - Historic Resources Review Board
 - Tourist Development Council
 - Loxahatchee River Coordinating Council
 - Impact Fee Review Committee
 - Bicycle/Pedestrian Advisory Committee
 - Linked Open Space Task Force
 - Community Center Advisory Groups
11. **NEW Policy 1.1-d:** Palm Beach County shall utilize the best available methods and sources of funding for the acquisition, development, operation and maintenance of parks and recreational facilities in order to lessen its need for ad valorem taxes. Currently available methods and sources of funding include but are not limited to the following:
 - State and federal grants
 - Park impact fees on new residential development
 - Bonds and other long-range financing techniques
 - Acquisition or lease of other government lands
 - Surplus land/property sales
 - Civic site dedications and/or cash-outs
 - Private property donations
 - Revenue sharing including the Florida Boating Improvement Fund
 - Private/public trusts and partnerships
 - User fees and tourist bed taxes
 - Interlocal and mutual use agreements with other agencies

ORDINANCE NO.

97-49

**12. REVISED Objective 2 1.2 Beach Park Acquisition and Development Park
Concurrency Levels of Service (LOS)**
[9J-5.014(3)(b)3 & (3)(c)1,2,3,4,5]

The Countywide standard for Beach Parks is 0.5 acres per 1,000 people. By 1995, the County shall be responsible for providing 72 percent of the total standard, or 0.36 acres per 1,000 people. The remaining 28 percent is being provided by other municipal and state facilities.

The County shall establish Countywide Park Concurrency Levels of Service Standards for total and developed acres of Regional, Beach and District Parks, and for active and passive recreational facilities to ensure that adopted Levels of Service are met concurrent with new development.

- 13. REVISED Policy 2-a 1.2-a:** The County shall acquire a minimum of 0.36 acres of maintain minimum Concurrency LOS Standards for total and developed acres of District, Beach Parks per 1,000 population by January, 1995: and Regional Parks, and for active and passive recreational facilities for the Countywide population. Concurrency LOS will be established at the lower figure of either the existing LOS in 1995 or the projected LOS in 2015 as follows:

Park Concurrency LOS 1995-2015			
	LOS 1995	Projected LOS 2015	Concurrency LOS
Park Classification	Total Acres/1000		
Regional	4.79	3.39	3.39
Beach	.50	.35	.35
District	1.70	1.38	1.38
	Developed Acres/1000		
Regional	2.00	2.62	2.00
Beach	.20	.21	.20
District	.77	1.00	.77
Active Recreation	Facility/Population		
Tennis Court	1/17,000	1/20,000	1/20,000
Basketball Court	1/50,000	1/25,000	1/50,000
L L Baseball Field	1/25,000	1/25,000	1/25,000
Mjr L Baseball Field	1/100,000	1/100,000	1/100,000
Softball Field	1/50,000	1/50,000	1/50,000
Football/Soccer Field	1/34,000	1/25,000	1/34,000
Volleyball Court	1/50,000	1/20,000	1/50,000
Racquetball Court	1/25,000	1/34,000	1/34,000
Roller Hockey Rink	0	1/100,000	1/100,000
Exercise Trail	1/50,000	1/34,000	1/50,000
Play Area	1/25,000	1/13,000	1/25,000
Passive Recreation	Facility/Population		
Picnicking Acres	1/13,000	1/7,000	1/13,000
Camp Site	1/7,000	1/4,000	1/7,000
Fishing Site	1/25,000	1/14,000	1/25,000
Hiking/Nature Trail	1/74,000	1/34,000	1/74,000
Bicycle Path/Trail	1/50,000	1/34,000	1/50,000

- 14. DELETED Policy 2-b:** The County shall open to the public a minimum of 0.23 acres of Beach Parks per 1,000 population by January, 1995.

- 15. DELETED Policy 2-c:** Beach Parks acquired through joint County and State purchases shall be given a high priority for development over the next five-year period and included in the 6-

ORDINANCE NO. 97-49

year Capital Improvement Plan.

16. **REVISED Policy 2-d 1.2-b:** Countywide Park impact fees shall be utilized to help fund the acquisition and development of Regional, Beach and District Parks needed as a result of growth: new residential development in Palm Beach County.
17. **NEW Policy 1.2-c:** The County shall assess and update Park Concurrency Levels of Service at intervals consistent with the Evaluation and Appraisal Reporting (EAR) process, as stipulated by Rule 9J-5, Florida Administrative Code, or more frequently as necessary to reflect changing conditions.
18. **NEW Policy 1.2-d:** Recreation facilities shall be planned and developed within the Urban Service Area to ensure the availability of active facilities within 5 miles and passive facilities within 10 miles of County residents. Outside the Urban Service Area, both active and passive facilities will be planned and developed to ensure that facilities are available within 10 miles of County residents.
19. **DELETED Objective 3 Regional Park Acquisition and Development**
~~The Countywide standard for Regional Parks is 7 acres per 1,000 people. By January 1995, the County shall be responsible for providing 65 percent of the total standard, or 4.55 acres per 1,000 people. The remaining 35 percent is provided by other state and federal facilities.~~
20. **DELETED Policy 3-a:** ~~The County shall provide a minimum of 4.55 acres of Regional Parks per 1,000 population by January, 1995.~~
21. **DELETED Policy 3-b:** ~~The County shall open to the public a minimum of 2.48 acres of Regional Parks per 1,000 population by January, 1995.~~
22. **DELETED Policy 3-c:** ~~The County shall protect existing natural areas within Regional Park properties through the development of a native revegetation, enhancement, and exotic removal program to be implemented by February 1, 1990.~~
23. **DELETED Policy 3-d:** ~~By 1995, the County shall develop nature interpretive centers or trails in all Regional Parks that take advantage of unique natural resource areas to provide an educational and pleasurable recreational experience for County residents as well as visitors.~~
24. **DELETED Policy 3-e:** ~~The County shall participate with federal, state, regional and local agencies, in efforts including the Loxahatchee River and Slough restoration project and other conservation projects of regional scope, to ensure that sufficient government lands are set aside to meet future Countywide Regional Park needs.~~
25. **DELETED Policy 3-f:** ~~Park impact fees shall be utilized to help fund the acquisition and development of Regional Parks needed as a result of growth.~~
26. **DELETED Objective 4 District Park Acquisition and Development**
~~The Countywide standard for District Parks is 5 acres per 1,000 people. By January 1995, the County shall be responsible for providing 25 percent of the total standard, or 1.25 acres per 1,000 people. The remaining 75 percent shall be provided by other state, municipal, or private facilities.~~
27. **DELETED Policy 4-a:** ~~The County shall acquire 1.25 acres of District Parks per 1,000 population by January, 1995.~~
28. **DELETED Policy 4-b:** ~~The County shall make available to the public 1 acre of District Parks per 1,000 population by January, 1995.~~
29. **DELETED Policy 4-c:** ~~The County shall locate new District Parks to ensure that active recreational needs are met in all Park District Service Areas.~~
30. **DELETED Policy 4-d:** ~~The County shall provide additional special recreational facilities as~~

ORDINANCE NO.

97-49

part of the District Park program that are available to the public on a non-membership basis.

31. **DELETED Policy 4-e:** The County shall coordinate efforts with the Solid Waste Authority and other County or local utility agencies to identify those sites to be phased out of utility use in the future that are available for District Park purposes.
32. **DELETED Policy 4-f:** Park impact fees shall be utilized to help fund the acquisition and development of District Parks needed as a result of growth.
33. **REVISED Objective 5 1.3 Community Parks Acquisition and Development**
[9J-5.014(3)(b)3 & (3)(c)4,5]
The Countywide standard for Community Parks is 2.5 acres per 1,000 people. By January, 1995, the County shall be responsible for providing 15 percent of the total standard, or 0.38 acres per 1,000 people. The County shall encourage the provision of the remaining 85 percent by interlocal agreement and land development regulations in conjunction with municipal or private plan for the adequate provision of Community Parks in the unincorporated areas through ULDC minimum requirements for on-site park acreage in new residential developments, and the provision of Community Parks in areas of existing deficiency that are not adequately served by other available facilities.
34. **DELETED Policy 5-a:** The County shall acquire a minimum of 0.38 acres of Community Parks per 1,000 population by January, 1995.
35. **DELETED Policy 5-b:** The County shall make available to the public a minimum of 0.23 acres of Community Parks per 1,000 population by January, 1995.
36. **NEW Policy 1.3-a:** The County shall require a minimum of the 2.5 acres of homeowner's neighborhood or community recreation areas per 1,000 persons to be developed in conjunction with all residential development in the unincorporated area through the provisions of ULDC Article 7.12, as may be amended.
37. **DELETED Policy 5-c:** The County shall include funding in the 6-Year Capital Improvement Plan for the development of Community Parks.
38. **NEW Policy 1.3-b:** By 1998 the County shall develop a plan for addressing community park needs in unincorporated areas of the County identified by the Board of County Commissioners as a targeted community redevelopment area. Project acquisition and development for these areas will be included in annual updates of the CIE subject to the annual appropriation of funds by the Board for such purposes.
39. **NEW Policy 1.3-c:** The County shall encourage the development and operation of community parks by special districts, non-profit groups, and private interests to help meet community level recreational needs. Annual Recreational Assistance Program Funds provided by the Board of County Commissioners will be included in annual updates of the CIE subject to annual appropriation of funds by the Board for such purposes.
40. **REVISED Policy 5-d 1.3-d:** The County shall utilize available acquisition and funding sources such as Planned Unit Development (PUD) civic site dedications, surplus land sales, County Recreation Assistance Programs and other alternative funding sources shall be utilized to help fund the acquisition and development of c .etc. to adequately provide for the Community Parks in order to meet the needs of current and future residents.
41. **DELETED Objective 6 Long-Range Planning and Funding**
Palm Beach County shall utilize alternative methods for funding the acquisition, development, and operation and maintenance of parks and recreational activities in order to lessen the ad valorem tax burden.
42. **DELETED Policy 6-a:** The County shall increase revenues generated by the Parks and Recreation Department from 10 percent of its 1985 total operations and maintenance budget to 20 percent by January, 1995.

ORDINANCE NO. 97-49

43. **DELETED Policy 6-b:** The County shall continue its efforts to obtain state grants to help fund the acquisition and development of County parks.
44. **DELETED Policy 6-c:** The County shall implement park impact fees on new development by February 1, 1990 to offset the cost of providing those additional parks and recreational facilities that are a direct result of new growth.
45. **DELETED Policy 6-d:** Where necessary, the County shall pursue the use of bonds and other financing techniques to assist in funding the development of parks and recreational facilities.
46. **DELETED Policy 6-e:** The County shall pursue the acquisition or lease of other government lands for recreational purposes.
47. **REVISED Objective 7 1.6 Intergovernmental Coordination**
[9J-5.014(3)(b)2 and 9J-5.014(3)(c)1]
 By February 1990, Palm Beach ~~The~~ County shall improve its communication, coordination and cooperation with other all providers of parks, recreational facilities, and open space, including federal, state, regional and local agencies, as well as and where possible the private sector, to ensure that Countywide needs are adequately served, the provision of Countywide public parks, recreational facilities, and open space, through the review of Land Development Projects and adherence to applicable federal, state and local statutes.
48. **REVISED Policy 7-a 1.6-a:** The County shall continue to work in cooperation with the School Board in identifying Community School/Park sites that will best serve the educational, cultural and recreational needs of County residents and shall continue to maintain joint use agreements to make these facilities more readily available to the public.
49. **DELETED Policy 7-b:** The County shall review all local government comprehensive plans for consistency with Countywide park classification, recreational facility, and open space standards and use interlocal agreements to ensure the availability of public recreation and open space for all County residents.
50. **REVISED Policy 7-c 1.6-b:** The County shall monitor existing interlocal agreements for park facilities with federal, state, local governments, the School Board and other public or private entities to ensure that the continued use of jointly funded facilities are available to all County residents on a non-discriminatory basis.
51. **REVISED Policy 7-d 1.6-c:** The County's, through the use of County bed tax revenues, shall continue to implement its program in cooperation with the Tourist Development Council to shall help support programs in cooperation with local agencies and citizen groups that organize and publicize various artistic, cultural, and recreational activities, or facilities or events that publicize and/or promote Palm Beach County as a tourist destination.
52. **DELETED Policy 7-e:** The County shall continue to require the provision of the equivalent of 5 acres of neighborhood and community recreation areas per 1,000 persons, by private development through the provisions of Article IX, Section 8, Ordinance 73-4, Palm Beach County Subdivision and Platting Ordinance (Sec. 125.01, F.S. and Chapter 163 F.S.) as amended. Ordinance 73-4 shall be reviewed by February 1, 1990 for consistency with other plan element requirements.
53. **DELETED Policy 7-f:** The Palm Beach County Cultural Council shall be responsible for maintaining and implementing the *Comprehensive Cultural Plan for Palm Beach County.*
54. **NEW Policy 1.6-d:** The County shall pursue the use of utility sites where possible for recreational and open space purposes and coordinate these efforts with the Solid Waste Authority, Water Utilities Department and other local utility agencies.
55. **NEW Policy 1.6-e:** The County shall participate in land acquisition and management efforts with federal, state, regional and/or local agencies, specifically including the Loxahatchee River

ORDINANCE NO.

97-49

and Slough corridor restoration, the SFWMD's East Coast Buffer, and other projects of regional scope that are intended to provide public passive recreational opportunities.

56. **REVISED Objective 8 1.5 Access Recreational and Cultural Opportunities**
[9J-5.014(3)(b)1 and 9J-5.014(3)(c)3]

By January, 1995, the County shall increase develop and/or expand park facilities that allow for public accessibility to County Parks, beaches and shores, waterways and recreational facilities through the provision of additional parking areas, boat ramps, bikeways, pedestrian ways and handicapped facilities in conjunction with the 6-Year Capital Improvement Plan and appropriate use of recreational, cultural, natural, historic and archeological resources.

57. **NEW Policy 1.5-a:** The County shall promote public access to County Parks, recreational facilities, beaches, shores and waterways through the provision and/or expansion of parking areas, boat ramps, bikeways, pedestrian ways and ensure that all parks and recreational facilities utilize barrier-free design and are consistent with federal Americans with Disabilities Act requirements and other state and local building codes.

58. **DELETED Policy 8-a:** By February 1991, the County shall adopt management plans for resource-based parks that include design criteria for recreational facility development and include those means of access that permit full public use of facilities, but that do not exceed recognized activity carrying capacity user guidelines of resources found on site.

59. **DELETED Policy 8-b:** The County shall administer the local Florida Boating Improvement Fund and make funds available through interlocal agreement with those municipalities and local agencies whose projects maintain or increase access to public waterways, Lake Okeechobee, the Intracoastal Waterway, or the Atlantic Ocean.

60. **DELETED Policy 8-c:** The County shall ensure that the handicapped are provided access to parks and recreational facilities through barrier-free design consistent with the requirements of state and local building codes.

61. **DELETED Policy 8-d:** The County shall prepare by October 1, 1991, a study with recommendations for all public beachfront property, public access points, public rights-of-way, as well as public easements on private property in the County that may be used to increase beach and shore access. Those sites identified as necessary to maintain or increase levels of service in the future will be targeted for access, acquisition and/or development purposes and included in the 6-Year Capital Improvement Plan or other County bond program by 1992.

62. **NEW Policy 1.5-b:** The County shall develop recreational trails and/or interpretive centers in parks with unique cultural, natural, historical or archeological areas that will provide learning experiences for County residents and also support local eco-tourism efforts.

63. **NEW Policy 1.5-c:** The County shall develop, and where appropriate provide funding for other public agencies to develop, additional special recreational facilities that are available to the public on a non-discriminatory use basis.

64. **NEW Policy 1.5-d:** The Palm Beach Cultural Council shall be responsible for maintaining and implementing the *Comprehensive Cultural Plan for Palm Beach County*.

65. **REVISED Objective 9 1.4 Provision of Open Space**
[9J-5.014(3)(b)4 and 9J-5.014(3)(c)1,2]

The Countywide standard for open space is 20 acres per 1,000 people. By 1995, the County shall be responsible for providing 33% of the Countywide standard for open space or 6.54 acres per 1,000 persons. In addition, by February 1, 1990, the County's ULDC shall have adequate provisions to ensure that lands are set aside in conservation, recreation, community and utilitarian open spaces are provided through the adoption of new or amended Land Development Regulations requiring minimum levels of open space for new developments for open space and the protection of that environmentally sensitive lands are protected for inclusion in the Countywide open space system.

ORDINANCE NO.

97-49

66. **NEW Policy 1.4-a:** The County shall develop planning strategies for a linked open space network that include but are not limited to the following elements:

- Conservation Areas and Preserves
- Environmentally Sensitive Lands
- Parks and recreational facilities
- Commercial recreation areas
- Lakes and canal systems
- Bikeways and trails
- Wildlife corridors
- Florida National Scenic Trail - Lake Okeechobee Segment

67. **REVISED Policy 9-a 1.4-b:** By February 1, 1990, the The County's ULDC shall adopt or amend and implement Land Development Regulations that include specific open space definitions and standards that addressing protection of open space, native ecosystems, and the use of native landscape buffering, consistent with the requirements of Section 163.3202(1), F.S. Florida Statutes.

68. **REVISED Policy 9-b 1.4-c:** The County shall require the reservation of planned Regional or District Park parks, p or Preservation/E and conservation areas shown in the Comprehensive Plan Map Series and shall not permit limit development in of these areas for a period not to exceed two years. During this , during which time the County shall acquire or release the reservation, as provided under ULDC Article 17.1.c.1, according to Article 2006.1, Ordinance 90-8, Palm Beach County Subdivision and Platting Ordinance, under the authority of Sec. 125.01, F.S., and Chapter 163, F.S., as amended.

69. **REVISED Policy 9-c 1.4-d:** By July 1, 1990, the The County shall adopt criteria to identify and manage environmentally sensitive areas site-specific management plans for resource-based parks within the County's park system as part of the County's protected open space system that include design criteria for recreational facility development and provide those means of public access to cultural and/or natural resources found on-site that do not exceed recognized activity carrying capacity or use guidelines.

70. **REVISED Objective 10 1.4 Linked Open Space Program**

[9J-5.014(3)(b)4 and 9J-5.014(3)(c)1,2]

Create linear open space and park system(s) and greenways by providing an open space network or networks that facilitate recreational activities, preserve natural resources and protect other open space areas. Preservation and creation of greenways shall be incorporated into the County Comprehensive Plan and considered during the recreation planning process, including costing of identified corridors where land acquisition may be needed, and identification of all possible funding sources. The County's ULDC shall have adequate provisions to ensure lands are set aside in new developments for open space and environmentally sensitive lands are protected for inclusion in the Countywide open space system.

71. **REVISED Policy 10-a 1.4-f.** By January 1, 1997, linear open space systems and corridors identified on the map within the The County's Comprehensive Plan which is entitled "Linked Open Space Map" shall will be considered during recreational used as a guide in the park planning, in order to and design process to ensure that open space linkages are incorporated and alternative means of accessing parks into the design of parks access are provided for the public.

72. **REVISED Policy 10-b 1.4-e.** By January 1, 1997, the Parks and The County shall assist in the planning of rRecreational facilities within linked open spaces and greenways that facilitate public access to Department will have completed model implementation tools, such as necessary interlocal agreements, easements and maintenance agreements with third parties which can be used to implement linkages between parks, conservation and residential areas and other open space resources.

73. **DELETED Policy 10-c:** As a part of the implementation of the Linked Open

ORDINANCE NO. 97-49

Space/recreational planning process after January 1, 1997, potential equestrian trail systems linking parks to rural residential areas shall be identified in locations where a particular neighborhood or user group has requested such a system. Should such a system be identified, the use of interlocal agreements, maintenance agreements with a user group, user fees, recreational easements and other such tools will be used to implement equestrian trails where public lands are not available and purchase cannot take place.

74. **DELETED Policy 10-d:** By January 1, 1997, new design for County parks shall include bicycle parking, and safe access shall be afforded to those opting to access the parks as pedestrians or bicyclists.
75. **DELETED Policy 10-e:** By January 1, 1998, a survey of existing County parks will be conducted with the assistance of the Palm Beach County Planning Division and/or use of student interns to identify those parks lacking bicycle parking and bicycle access. The cost of retrofitting those parks with bicycle parking and bicycle access will be identified and potential funding sources for these improvements will be identified.
76. **DELETED EXISTING AND FUTURE CONDITIONS SECTION:**

III. — EXISTING CONDITIONS

A. — Passive Recreation

As the name implies, passive recreation requires a resource base, either natural or manmade, with which the recreation user may interact. Oceans, lakes, woodlands and other natural areas all offer a wide variety of passive recreational experiences. Generally, large resource-based areas provide the best setting for passive recreation; however, smaller areas may serve a special need, especially within the confines of an urbanized area. Both Beach Parks and Regional Parks will accommodate the major resource-based activities or passive recreational needs for millions of users on a Countywide basis.

In the mid-1980s, Palm Beach County and the State of Florida recognized that the availability of undeveloped oceanfront property suitable for Beach Park use in this County was dwindling and would soon entirely disappear. As a result, the Board of County Commissioners approved a \$34.4 million Beach Acquisition Revenue Bond in 1986 and also participated with the State of Florida in the acquisition of three additional properties. A total of 191 acres with over one-mile of ocean frontage has been added to the inventory of public beaches to be operated by Palm Beach County in the past three years. Development of these and other undeveloped beach properties over the next five years will increase the public accessibility to the beaches and shores.

Table 6 lists the inventory of beaches either owned and operated, leased and operated, or owned and leased to other agencies by Palm Beach County as of September, 1988. In addition to those Beach Parks operated by the County, the coastal municipalities and the State provide over 385 acres of beach parks for their own residents as well as the public in some cases. Thus, over 978 acres of Beach Park are in public ownership in 1989, or enough to meet the Countywide standard of 0.5 acres per 1,000 persons through buildout.

ORDINANCE NO. 97-49

TABLE 6
BEACH PARK INVENTORY (1988)

Beach Park	Total Acres	Developed Acres	Oceanfront Footage
Atlantic Dunes/Anchor Park*	1.20	1.20	500
Juno Beach Park	4.90	4.90	300
Jupiter Beach Park	36.00	30.00	1,700
Gulfstream Park	7.00	5.00	600
Loggerhead Park	11.00	11.00	900
Coral Cove Park	4.60	4.60	600
Dubois Park	20.00	10.00	0
John D. MacArthur State Pk**	134.55	0.00	8,300
Ocean Inlet Park	8.70	8.70	600
Phil Foster Park	7.10	7.10	0
Ocean Reef Park	11.00	11.00	700
Ocean Ridge Hammock	12.00	0.00	1,100
Carlin Park	126.00	66.00	3,000
South Inlet Park	10.90	8.90	850
R. G. Kreusler Park	2.90	2.90	450
Coral Cove Addition North++	2.90	0.00	300
Ocean Cay Parcel++	13.00	0.00	700
Radnor/Diamondhead Parcel++	153.63	0.00	3,429
Milani Parcel+	5.51	0.00	352
Coral Cove Addition South++	20.74	0.00	1,647
TOTAL	593.63	171.30	26,028

* — Leased to the City of Delray Beach

** — County maintains 39 percent ownership of this 345-acre State Park

+ — Acquired since 1985

++ — Acquired since 1985 and leased from State DNR.

SOURCE: Palm Beach County Parks and Recreation Department, 1989

In 1988, there were five Regional Parks totaling over 4,000 acres in Palm Beach County, directly owned, or leased and operated by the County. The South Florida Water Management District, through the "Save Our Rivers" program, recently acquired a 440-acre parcel known as Reese Groves in the north County adjacent to Riverbend Regional Park. Negotiations are currently underway to lease this parcel to the County as an adjunct to Riverbend Park.

The County controls of over 4,000 acres of Regional Parks that serve Palm Beach County. The 11,000 acre Jonathan Dickinson State Park, and the 2,551 acre Loxahatchee Wildlife Refuge Center also serve as Regional Park facilities for Palm Beach County residents. County-operated Regional parks are listed in Table 7.

Thus, in 1989, Palm Beach County residents have access to over 16,500 acres of Regional Parks that are in public ownership or enough Regional Park Acres to satisfy the 7 acre per 1000 Countywide standard through Buildout.

ORDINANCE NO. **97-49**

TABLE 7
REGIONAL PARKS INVENTORY (1988)

Regional Park	Total Acres	Developed Acres
John Prince Park	575	463
Okeechetee Park/Palm Beach Pines*	1,875	505
Morikami Park	140	40
South County Regional Park	856	0
Riverbend Park/Reese Groves**	627	7
TOTAL	4,073	1,015

* Includes 812 acres leased from State

** Includes 440 acres leased from S. Florida Water Management District

SOURCE: Palm Beach County Parks and Recreation Department, 1989

The Map legend at the back of the element contains a matrix of existing and future facilities provided at each park or recreation site.

Map 31 illustrates those existing County Parks that provide passive recreational facilities. While Beach and Regional Parks can be thought of as serving the population on a Countywide basis, they primarily serve those persons residing within a ten-mile radius.

B. Active Recreation

Active recreation represents an array of special or activity related facilities that can be provided in close proximity to population centers. These facilities most often require specially constructed fields, courts or other apparatus suited for a particular user-oriented activity. Since active recreational facilities are more easily accommodated in large open spaces, they normally do not require a significant natural resource base as do most passive activities.

District and Community Parks primarily allow the County to meet the active recreational needs of residents who live within a five-mile radius of the facility. The distribution of these mid-size parks throughout areas of the County that are more densely populated can have a profound effect on the adequacy of active recreational facilities.

Much of the need for additional District and Community Parks can be attributed to new residential development, especially in the fringe areas of the incorporated and unincorporated areas of the County. These new developments often create additional service areas for District and Community Parks. Therefore, it is necessary that new developments meet their own needs for smaller parks and additionally, dedicate suitable land for public District or Community Parks where needed.

It is estimated that almost half of the total demand for Neighborhood and Community Parks is being met privately by condominium or homeowners' recreation areas and private clubs as required under the Unified Land Development Code, as amended. Thus, much of the existing demand for Neighborhood and Community Park acreage and facilities, such as community pools, clubhouses, tennis and shuffleboard has been met, especially in the higher economic end developments in the County. The need still exists, however, for the development of presently designated but undeveloped community parks, as well as for additional parks in new service areas and areas where no other parks are available. Table 8 lists the inventory of County-operated Community Parks:

ORDINANCE NO. **97-49**

TABLE 8
COMMUNITY PARKS INVENTORY (1988)

Community Park	Total Acres	Developed Acres
Cabana Colony Pool	2.50	2.50
Canal Point Park	4.50	4.50
Westgate Community Center	5.50	5.50
Bert Winters Park	17.50	17.50
American Homes Park	16.50	11.50
Duncan Padgett Park	10.00	8.00
Sandalfoot Cove Park	15.00	12.00
Haverhill Park	23.00	23.00
Juno Park	30.00	20.00
Loxahatchee Groves Park	30.00	10.00
West Jupiter Community Center	8.60	6.60
Pondwood Park	25.00	20.00
Pinewoods Park	22.00	19.00
Paul Rardin Park	7.00	7.00
Seminole Lakes Civic Site* 'C'	25.00	0.00
Morikami Community Park* 'A'	15.00	0.00
ASFWMD Parcel*	10.00	0.00
Ryan Homes Park*	9.50	0.00
GRQ Civic Site* 'B'	30.00	0.00
Waterway Park*	30.00	0.00
Frenchman's Creek*	15.00	0.00
C-18 Linear Park	11.00	0.00
TOTAL	362.60	167.10

* Parks required through land development orders.

SOURCE: Palm Beach County Parks and Recreation Department, 1989

Table 9, an inventory of County-operated District Parks, includes special facility sites such as those with competition-size pools, district-wide boat ramps, or marinas and golf courses.

ORDINANCE NO. 

97-49

TABLE 9
DISTRICT PARKS INVENTORY (1988)

District Parks	Total Acres	Developed Acres
Aquacrest Pool	3.00	3.00
Caloosa Park	68.00	68.00
Burt Reynolds Park	38.00	28.00
Lake Lytal Park	70.00	50.00
Santaluces Athletic Complex & Pool	28.10	28.10
John Stretch Park	36.00	26.00
Lake Ida Park	170.40	135.40
Glades Pioneer Park	68.00	40.00
South County Civic Center	15.00	3.00
Belle Glade GC (Back 9)*	101.00	101.00
Boynton Beach Municipal GC**	160.00	0.00
Southwinds Golf Course	109.00	109.00
Public Shooting Range+	148.00	0.00
Peanut Island++	60.00	0.00
TOTAL	1,074.50	591.50

* — Developed by County and leased to Belle Glade.

** — Leased to Boynton Beach.

+ — Leased from State of Florida.

++ — Under management agreement with Port of Palm Beach.

SOURCE: — Palm Beach County Parks and Recreation Department, 1989

District Parks provide most of the active recreational opportunities for residents of the County. Not all District parks are strictly for active facilities, as in the case of special facilities such as marinas, boat ramps, golf courses or museums.

Map 30 illustrates existing County Parks that currently provide active recreational facilities. Active recreational facilities primarily serve those residents within a five mile service radius and generally include District and Community Parks, as well as Regional Parks in those cases where active facilities are included.

IV. — FUTURE CONDITIONS

A. — Passive Recreation

Since one of the major attractions of both Beach Parks and Regional Parks is passive recreation facilities, these parks satisfy much of the overall passive facility needs. Table 10 illustrates the required acres for Beach and Regional Parks through buildout. However, only a certain portion of the total Countywide demand for any given park class has been identified as the responsibility of the County.

B. — Active Recreation

Active recreational facilities are primarily found in District and Community Class Parks and hence these two classes of parks satisfy much of the active recreation demand. Table 10 illustrates the number of acres needed through buildout to meet the demand for District and Community Parks.

In the following table, the total park acreage demands are calculated through buildout according to the County's respective portion of total demand or adopted levels of service and projected population figures. The total park acreage needs are then determined by subtracting the 1988 supply from the total acres of demand.

ORDINANCE NO. **97-49**

Table 11 illustrates the developed park acreage demands through buildout according to the County's respective portion of total demand or adopted levels of service. The developed park needs are also projected through buildout by subtracting the 1988 developed acres inventory supply from the developed acres demand figures.

TABLE 10
TOTAL ACRES BY PARK CLASS
ADOPTED LEVELS OF SERVICE/DEMAND AND ADJUSTED NEEDS
(1995 - BUILDOUT)

	1988		1995		2010		Buildout	
Park Class	Supply	Demand	Need	Demand	Need	Demand	Need	
Community	376	397	21	717	341	981	605	
District	1,075	1,324	249	2,870	1,795	3,923	2,848	
Regional	4,073	4,820	747	7,534	3,461	8,237	4,164	
Beaches	458+	381	0	517	60	565	108	
TOTAL	5,982	6,822	930	12,343	6,361	13,400	7,428	

* Does not include John D. MacArthur State Park or Atlantic Dunes Park.

SOURCE: Palm Beach County Parks and Recreation Department, 1989

TABLE 11.1
DEVELOPED ACRES BY PARK CLASS
ADOPTED LEVELS OF SERVICE/DEMAND AND ADJUSTED NEEDS
(1995 - BUILDOUT)

	1988		1995		2010		Buildout	
Park Class	Supply	Demand	Need	Demand	Need	Demand	Need	
Community	199	241	42	761	562	952	753	
District	592	1,048	456	3,424	2,833	3,837	3,246	
Regional	1,015	2,599	1,589	7,609	6,594	8,058	7,042	
Beaches	171	283	112	502	331	553	381	
TOTAL	1,977	4,171	2,199	12,296	10,320	13,400	11,422	

SOURCE: Palm Beach County Parks and Recreation Department, 1989.

ORDINANCE NO. 97-49

TABLE 11.2
ADOPTED LEVEL OF SERVICE/DEMAND & ADJUSTED NEEDS

	1988		1995		2010		Buildout
Type Facilities	Supply	Demand	Need	Demand	Need	Demand	Need
<u>Special Facilities</u>							
25 Meter Pool	03	04	01	07	04	09	06
Marina Slips	42	04	02	72	30	78	36
Boat Ramp	18	21	03	33	15	39	21
Golf Courses (9-Hole)	03	04	01	10	07	16	13
<u>Active Facilities</u>							
Tennis (Court)	37	53	16	79	42	97	60
Basketball (Court)	19	26	07	65	46	97	78
L.L. Baseball (Field)	22	36	14	53	31	67	45
Mjr. L. Baseball	11	17	06	26	15	31	20
Softball (Field)	14	19	02	07	13	31	17
Football/Soccer (Fd)	24	31	07	44	20	52	28
Exercise Trail	17	21	04	34	17	39	22
Racquetball (Ct)	30	40	09	59	29	67	37
Play Area (each)	34	60	26	95	61	130	96
Volleyball (Court)	12	31	19	49	37	67	55
<u>Passive Facilities</u>							
Camping (Acres)	44	64	20	100	56	118	74
Picnicing (Acres)	84	123	39	175	91	200	117
Fishing (Site)	25	42	17	115	90	157	132
Hiking & Nature Trails (Miles)	12	26	14	57	45	78	66
Bicycling (Miles)	12	21	09	29	17	39	27
Horse Riding (Mile)	10	16	06	29	19	39	29

C. Open Space

Open space is an important component of the overall quality of life in Palm Beach County. It is comprised of multiple facets of the landscape and serves myriad functions. From conservation areas and waterways, to parks and recreation areas, to community and utilitarian open space, it is a main thread that ties together and lends continuity to the urban fabric.

Conservation Open Space is of major importance because of its role in preserving and protecting our valuable native ecosystems on a Countywide basis. Protection and acquisition of environmentally sensitive lands will add to the County's valuable Conservation Open Space inventory, which is one of the main focuses of the Conservation Element and is addressed in its Goal, Objectives and Policies. The following table, is a summary of the major components of the Open Space System in Palm Beach County:

TABLE 11.3
MAJOR CONSERVATION OPEN SPACE TRACTS

Area	Owner-ship	Acreage
NW Fork Loxahatchee River	SFWMD	1,400
J.W. Corbett Wildlife Mgt.	DNR	56,000
Loxahatchee Slough	Private	-----
West Palm Bch Catchment Area	WPB	-----
Conservation Area 1	SFWMD	1,043,085
Conservation Area 2	SFWMD	42,000
Holey Land	SFWMD	35,350
Browns Farm	SFWMD	4,460
Rotenberger Tract	SFWMD	23,970
Strazulla Tract	SFWMD	640

Therefore, as of 1985, over 300,000 acres of Conservation Open Space are within governmental control in Palm Beach County.

ORDINANCE No. **97-49**

The County's Recreational and Open Space system is comprised of parks, recreation areas and special facilities. While Recreation Open Space is the most widely utilized part of the Open Space System, often these facilities are adjacent, or in close proximity, to a Conservation Open Space resource or other natural resource that supports passive recreational opportunities for the public.

Community Open Space in the unincorporated areas is largely controlled through the development process and primarily through the County's Unified Land Development Code and land development regulations. Residential developments are presently required to set aside 35 percent of their gross acreage for open space purposes. Palm Beach County is in the process of revising its land development regulations and related ordinances to set aside environmentally sensitive areas located within developments for protection within a Countywide Open Space system.

Utilitarian Open Space is largely comprised of drainage district canals, road and transmission line rights-of-way, utility sites and public building grounds. These areas serve utilitarian functions but can do much in the way of providing a lineal framework that ties the overall open space system together. Parkways and bikeways can become the link that ties together many open space elements and provide public access to Recreation Open Space and Conservation Open Space areas. Efforts are underway with South Florida Water Management District and local drainage districts to identify canal systems that serve as wildlife corridors that connect the larger conservation tracts and that may be identified for public access purposes.

Map 1 of the Conservation Element denotes major conservation lands and corridors identified as playing a key role in the County's open space system. These, as well as other important conservation lands, are also identified in the Conservation Element and Inventory of Native Ecosystems Map.

While Palm Beach County has an abundance of protected conservation areas for an urbanized County, the need still exists for conservation of micro areas within the urban service or developed areas of the County. The adoption of new more stringent land development codes to protect these remaining environmentally sensitive areas within the urban boundaries is a major objective of the Conservation Element.

LINKED OPEN SPACE PROGRAM

USE OF EXISTING PUBLIC LANDS -- CANAL RIGHTS-OF-WAY, EASEMENTS

The Linked Open Space Program is designed to preserve and connect open space areas within the County while minimizing public expenditure for land acquisition. In some instances, this can be achieved by the use of public rights-of-way initially acquired for other purposes. Palm Beach County is drained by a network of canals which can also serve as a means of connecting parks, conservation areas and other open space resources. Use of the canal maintenance rights-of-way, however, is conditioned upon several factors:

First, Palm Beach County does not own or operate the canals. The agencies responsible include the U.S. Army Corps of Engineers, the South Florida Water Management District, and numerous special districts created by the Florida Legislature. Therefore, any recreational use of these areas on behalf of the County itself will require interlocal agreements. If the use is proposed by a third party desiring to implement the Linked Open Space Program recommendations, the Palm Beach County Parks and Recreation Department may provide technical assistance to that third party, or may participate in the agreement if feasible.

A second important factor conditioning the use of canal rights of way is the preservation of the primary function of the canals -- surface water management and flood control. No structures can be placed within canal maintenance rights-of-way which would obstruct the passage of maintenance equipment, disturb the canal banks or block the flow of canal water. Therefore, only such passive recreational uses as hiking trails, equestrian trails and bird watching can take place along these proposed recreational greenways.

A third factor conditioning the use of canal maintenance rights-of-way is the fact that limited purpose governments, such as special districts, currently do not have protection from liability similar to that available to general purpose governments or to private parties who open land for public recreation

ORDINANCE NO.

97-49

and receive no compensation for such use. Until this liability issue is resolved, many canal rights-of-way within Palm Beach County will be unavailable for passive recreational use.

The final factor conditioning such use is the fact that canal maintenance rights-of-way are not always publicly owned. Easements across private property are common methods used by drainage districts to access canals. Accordingly, recommended recreational greenway/open space links which use canal easement areas will protect private property rights.

The data and analysis supporting the recommended open space links usage of canal maintenance rights-of-way is located in Chapter V of the support document entitled "Linked Open Space Program." That chapter of the support document also provides program recommendations to address the liability and private property issues involved in use of canal maintenance rights-of-way.

The canal maintenance areas which are recommended for use as recreational greenway/linked open space links are listed below:

1. C-18 Canal Trails
2. The West Palm Beach/C-51/L-13 Canal
3. Special District Drainage Canal Easements/R-O-W (when liability issues are resolved)
4. Lake Okeechobee Trail network

For additional information on the Linked Open Space Program, consult the Introduction/Administration, Land Use, Traffic Circulation, Mass Transit, Conservation, Intergovernmental Coordination and Capital Improvements elements. The map entitled "Linked Open Space Map" is contained within the Land Use Element.

V. PLAN DESCRIPTION

Overall, the proposed Five-Year Parks and Recreation Capital Improvement Plan included in the Capital Improvement Element is designed to provide a better distribution of parks and facilities Countywide based on growth while still addressing those areas that presently exhibit a critical or special need. The basic premise used in developing the Parks and Recreation Capital Improvement Plan was to provide a slightly higher level of service in total park acres available per 1,000 population; and more importantly, to help increase the amount of developed acres of parks from 33 percent of the total in 1988, to 53 percent by 1995. This is reflected in an aggressive park development program that allocates approximately 80 percent of the total Capital Improvement dollars for parks and recreational facility development. The ability to direct the Plan toward park development has been made possible through the acquisitions by purchase or lease, since 1985, of 190 acres of Beach Parks, 100 acres of Community Parks and 1,400 acres of Regional Parks.

Except for District Park needs, these acquisitions represent a major achievement by the County over the past 6 years to meet the adopted park acreage needs for both current and future residents. The acquisition of three new district parks, however, has been proposed in the Capital Improvement Element.

Finally, the Regional Park acreage necessary to complete the Five-Year Recreation Capital Improvement Plan is already in County or State ownership and may be identified and secured for public use prior to 1995 at no additional capital expense.

The Capital Improvement Plan has been developed in accordance with the Goal, Objectives and Policies set forth above. It is projected that the proposed Plan will enable Palm Beach County to meet the park and recreational needs of the County through 1995 in the most cost-efficient way. Table 12 is a summary of that Plan.

ORDINANCE NO. 97-49

TABLE 12
PARK IMPROVEMENT PLAN (1990-1994)
SUMMARY BY PARK CLASS

Park Class	Acres to Be Developed	Acres to Be Acquired
Community	85	0
District	364	420
Regional	1,785	465*
Beach	127	0
	0	0
Total	2,361	885

* To be acquired through lease agreement or other means.

SOURCE: Palm Beach County Parks and Recreation Department, 1989

A. Passive Recreation

While substantially improved since 1985, the existing supply of public beaches already shows signs of overuse. Thus, development of six new Beach Parks acquired since 1985 and completion of master plan improvements at existing County Beach Park facilities has been given a high priority. The timetable for opening these facilities to the public is addressed in the Objectives and Policy section of this Element.

Table 13 illustrates both the new and existing Beach Parks to be developed and made available to the public between 1988 and 1995.

The summation of all park classes may be considered as the overall increase in the County's Open Space system.

TABLE 13
BEACH PARK ACQUISITION AND DEVELOPMENT

Beach Park	Developed	Opened
Jupiter Beach Park Expansion	1991	1992
Dubois Park Expansion	1991	1992
Ocean Ridge Hammock	1994	1995
Carlin Park	1990	1991
Coral Cove Addition North+	1991	1992
Ocean Cay Parcel+	1993	1994
Radnor/Diamondhead Parcel	1994	1996
Milani Parcel	1992	1993
Coral Cove Addition South+	1992	1993

+ State/County lease agreement

While the existing supply of Regional Park acreage is at an acceptable level in 1988, the amount of underdeveloped acreage is of major concern.

Development of the six Regional Parks listed in Table 14 is a top priority of the County, since the existing demand for recreational facilities in all Park Districts already exceeds the available supply. In addition, two new Regional Park sites will probably be necessary by the year 2010 to accommodate new population growth in the Central and North Park Districts. Lands comprising and surrounding the Loxahatchee Slough in North County and the Indian Mounds area in Southwestern County are recommended as future Regional Park sites.

ORDINANCE NO. 97-49

The completion of these Regional Parks will ultimately provide an equitable distribution of passive facilities Countywide while serving the greatest service area and number of residents and tourists.

Table 14 illustrates new or existing Regional Parks to be acquired, and/or developed and opened to the public between 1988 and 1995.

TABLE 14
REGIONAL PARK ACQUISITION AND DEVELOPMENT

Regional Park	Developed	Opened
John Prince Park *	1989-1990	1990-1991
Okeechobee/Palm Beach Pines + *	1989-1994	1989-1995
Morikami Park *	1990-1993	1991-1994
South County Regional **	1989-1994	1990-1995
Riverbend Park/Reese Groves + **	1990-1993	1991-1994
Indian Mounds ***	1995-1996	1996-1997

* — Parks existing prior to 1988 to be expanded

** — Parks undeveloped prior to 1988

*** — Existing preserve, to be designated as park.

+ — Parks leased from the State

SOURCE: Palm Beach County Parks and Recreation Department, 1989

Map 31 illustrates new parks which will be developed to provide passive recreational facilities. They will serve passive facility needs for persons residing within a ten-mile radius.

B. Active Recreation

District and Community Parks are important in providing active recreational opportunities in close proximity to the population areas they serve. The location of additional District and Community Parks relative to new and existing service areas is necessary to accomplish a better distribution of parks and facilities for all residents. For this reason, the new parks identified in this Plan are based on geographical areas of the County where there are identifiable gaps in the distribution of existing parks with active recreational facilities.

Tables 15 and 16 illustrate the Community and District Parks to be acquired, developed and opened to the public between 1988 and 1995.

ORDINANCE No.

97-49

TABLE 15
COMMUNITY PARK ACQUISITION AND DEVELOPMENT

Community Park	Developed	Opened
Westgate Community Center	1990	1991
Bert Winters Park	1990	1991
American Homes Park+	1992	1993
Duncan Padgett Park	1993	1994
Sandalfoot Cove Park	1990	1991
Juno Park	1990	1991
Loxahatchee Groves Park	1993	1994
West Jupiter Community Center	1990	1991
Pondwood Park	1994	1995
Pinewoods Park	1991	1992
SFWMD Parcel	1990	1991
C-18 Linear Park	1990	1991
Waterway Park +	1991	1992

+ Obtained through development process dedication.

SOURCE: Palm Beach County Parks and Recreation Department, 1989.

TABLE 16
DISTRICT PARK ACQUISITION AND DEVELOPMENT

Community Parks	Acquired	Developed	Opened
Burt Reynolds Park	*	1991	1992
Lake Lytal Park	*	1991	1992
Santalucas Athletic Complex	*	1998	1989
John Stretch Park	*	1992	1993
Lake Ida Park	*	1992	1993
Glades Pioneer Park	*	1987	1988
South County Civic Center	*	1989	1990
South Central District Park	1991	1992	1995
West Central District Park	1990	1992	1993
Central District Park	1994	1995	1996
North District Park	1990	1991	1992
South Bay Campground	1989	1990	1991
Pahokee Breakwater and Park	*	1990	1991

* District Park existing prior to 1985.

SOURCE: Palm Beach County Parks and Recreation Department, 1989

Map 30 illustrates new parks which shall be developed to provide active recreational facilities. They will serve active facility needs for those persons residing within a five-mile radius.

C. Program Evaluation and Monitoring

The Recreation and Open Space program will be evaluated every two years to determine the status of park acquisition and development.

77. REVISED COMPREHENSIVE PLAN MAP SERIES:

CHANGE: Three maps which depict park facilities by type are being replaced by two maps which depict parks according to existing or future status. See exhibit E for specific maps.

ORDINANCE NO.

97-49

D. Conservation Element, EAR Based revisions, additions, and deletions.

NEW CONSERVATION ELEMENT POLICIES:

1. **ADDED Policy 3.1-b:** The County recognizes the importance of the South Florida Water Management District's (SFWMD) East Coast Buffer (ECB) area to protect the environmental integrity and the water resources of the County. Accordingly, the County shall coordinate with the SFWMD in their efforts for the ECB. The County shall facilitate flexible site designs, within and adjacent to the ECB, through mechanisms such as flexible site development provisions that protect, enhance, and are compatible with the functions of the ECB. The County shall discourage, within and adjacent to the ECB, those land uses incompatible with the ECB functions including, but not limited to, heavy commercial and industrial uses, solid waste disposal and transfer stations, cemeteries, transportation facilities, and gas or service stations. The County recognizes the SFWMD's role in determining if site designs are compatible with the ECB and therefore, will coordinate and consider SFWMD recommendations in land use compatibility and zoning decisions for areas within and adjacent to the ECB.
2. **ADDED Policy 3.1-c:** The County shall coordinate with the South Florida Water Management District (SFWMD) in their efforts to ensure the availability of water for natural system restoration and for water management purposes by participating in the Water Preserve Area (WPA) studies. The County shall facilitate flexible site designs, within and adjacent to the WPA study area, through mechanisms such as flexible site development provisions that protect, enhance, and are compatible with the functions of the WPA's. The County shall discourage, within and adjacent to the WPA study area, those land uses incompatible with the WPA functions including, but not limited to, heavy commercial and industrial uses, solid waste disposal and transfer stations, cemeteries, transportation facilities, and gas or service stations. The County recognizes the SFWMD's role in determining if site designs are compatible with the WPA's and therefore, will coordinate and consider SFWMD recommendations in land use compatibility and zoning decisions for areas within and adjacent to the WPA study area.
3. **ADDED Policy 3.1-d:** The County, in close coordination with the South Florida Water Management District and other environmental regulatory and planning agencies, shall encourage that wetland mitigation, environmental protection and water management efforts support and optimize the functions of the East Coast Buffer and the Water Preserve Areas.
4. **ADDED Policy 3.1-h:** The County shall coordinate with the South Florida Water Management District in their regulatory and planning efforts for the protection of aquifer recharge functions and for environmental protection efforts.
5. **RELOCATED policy 4.1-e to the Transportation Element:** ~~The County shall the address air quality concerns due to vehicle emissions through policies in the Traffic Circulation Element and the bicycle as an alternative mode of transportation through policy 1.4-d in the Mass Transit Element.~~

INTRODUCTION AND ADMINISTRATION ELEMENT AMENDMENTS

6. **ADDED ACRONYMS:**
ASR Aquifer Storage and Recovery
ECB East Coast Buffer
WPA Water Preserve Area

7. **ADDED AND REVISED DEFINITIONS:**

ORDINANCE NO. 97-49

AQUIFER STORAGE AND RECOVERY - The process by which wells are used to augment natural groundwater recharge and assist in expanding water supplies within the County by injecting water underground for temporary storage and later recovery.

EAST COAST BUFFER - A buffer system immediately to the east of Water Conservation Area Number 1 (Arthur R. Marshall Loxahatchee National Wildlife Refuge) established and delineated as cell boundaries by the South Florida Water Management District and accepted by the District's Governing Board on January 12, 1995. The buffer consists of marshes, reservoirs, and groundwater recharge areas. The buffer serves as a barrier to reduce the impacts of development to the Everglades, reduce seepage losses from the Water Conservation Area and to provide additional opportunities for the capture of excess stormwater currently lost to tide, and water storage, treatment and recharge.

GROUNDWATER RECHARGE - An area with relatively permeable soil or subsurface which provides significant recharge to the aquifer or where recharge can be significantly enhanced through operational or structural modifications. The primary function is to allow surface water to migrate downward into the water table. Recharge may also incorporate Aquifer Storage and Recovery capability.

RESERVOIR - A man-made impoundment, usually above surrounding natural ground elevation for the long term storage of water on the surface. Reservoirs may also incorporate Aquifer Storage Recovery capability.

STORMWATER ATTENUATION - An area that can accommodate excess stormwater runoff on a short term basis for later release. Stormwater attenuation may also incorporate Aquifer Storage Recovery capability.

WATER PRESERVE AREA - Lands which will provide one or more of the following water management functions: wetland, reservoir, stormwater attenuation, water quality treatment or groundwater recharge or other uses deemed necessary upon completion of the Water Preserve Area Feasibility Analysis being conducted by the South Florida Water Management District and the United States Army Corps of Engineers.

WATER-QUALITY TREATMENT - An area used for improvement of the quality of surface water, usually through the settling out of particulate or by natural biological processes.

WETLANDS - As defined by Chapter 373.019 (17), Florida Statutes, including Defined as open bodies of water and those portions of a water-body areas that are inundated at regular and periodic intervals, or those areas where vegetation is dominated by submergent, emergent and transitional species listed in Chapter 62-340, Florida Administrative Code.

8. DELETE SUMMARY OF EXISTING AND FUTURE CONDITIONS:

~~SUMMARY OF EXISTING & FUTURE CONDITIONS~~

~~A. Wetlands/Conservation Areas~~

~~Many natural areas, including freshwater and marine wetlands, are located within the County. Some of these areas have been specifically designated as conservation areas, including the Arthur R. Marshall Loxahatchee National Wildlife Refuge, the J.W. Corbett Wildlife Management Area, the Holey Land/Rotenberger Tract, Water Conservation Area 2A, the West Palm Beach Water Catchment Area, the Loxahatchee Slough, Brown's Farm Wildlife Management Area, the Wild and Scenic portion of the Loxahatchee River, the Loxahatchee River/Lake Worth Creek Aquatic Preserve, and the Indian River Lagoon Aquatic Preserve. Other sensitive areas have not been designated, but have been identified on the Inventory of Native Ecosystems in Palm Beach County. Conservation areas are managed for their wildlife, habitat values, and recreational activities. Other conservation areas have been designated and set aside through regulatory processes, including two large preserves in private ownership that total over 2200 acres.~~

ORDINANCE NO. 97-49

~~Additionally, environmentally sensitive areas have been specifically designated and identified for acquisition in the "Inventory of Native Ecosystems in Palm Beach County" which was completed in~~

1988. The County's Environmentally Sensitive Lands Acquisition Program was developed in 1984 because the environmentally sensitive lands in the County were rapidly being lost to development. On March 21, 1991, a \$100 million bond issue was passed to fund the acquisition of approximately 25,000 acres of environmentally sensitive lands. Native ecosystems that have been partially or fully acquired with Environmentally Sensitive Bonds Funds, leased for management purposes, or acquired through donation or other means as of October 1996 totaling 14,395 acres are: Delray Oaks - 24 acres, Frenchman's Forest - 150 acres, Jupiter Ridge - 261 acres, Juno Hills - 530 acres, Loxahatchee River - 367 acres, Loxahatchee Slough - 11,927 acres, Pal-Mar - 100 acres, Rosemary Scrub - 14 acres, Royal Palm Beach Pines - 747 acres, Seacrest Scrub - 54 acres, and Yamato Scrub - 221 acres. Properties in negotiation for acquisition or leasing for management purposes as of October 1996 totaling 11,074 acres are: Pal-Mar 7,491 acres, Juno Hills - 33 acres, Singer Island Seagrasslands - 161 acres, Knob Hill - 79 acres, and Loxahatchee Slough - 3,310.

Natural areas that are expected to be developed with visitor facilities (parking lot, handicapped-accessible nature trail, walking trails, and informational kiosk) in 1997 are: Jupiter Ridge, Rosemary Scrub (possibly early 1998), Royal Palm Beach Pines, and Seacrest Scrub. The County has adopted the Natural Areas Ordinance (94-13) that provides regulatory protection for acquired sites and the Natural Areas Stewardship Endowment Fund Ordinance (94-31) that provides for an endowment fund in which monetary donations and other funds received can be used to fund ongoing management activities on County-managed environmentally sensitive lands.

The water supply schedules and the quality of the water going into these conservation areas are a cause for environmental concern. Drainage, urban and agricultural runoff, and invasion non-native plant species that reduce natural diversity and wildlife habitat have adversely affected these areas. The decline in health and natural diversity signals the need for continual protection and restoration efforts through the adjustment of water supply schedules, improved methods of controlling runoff water quality, and the prevention of the spread of invasive non-native plant species.

Linked Open Space Program

Conservation Greenways/Animal Wildlife Corridor

A network of potential wildlife corridors has been identified which connects every major public conservation area in Palm Beach and Martin counties with the Everglades. In addition to the support these corridors will provide to preservation of wildlife and native habitat, these corridors allow long-distance hiking from the Atlantic Ocean west to Lake Okeechobee, and south into the Everglades. This network would give hikers, nature photographers, bird watchers and explorers the opportunity to pass through every type of ecosystem in Palm Beach County, from pine flatwoods to Florida scrub and wet prairies.

The data and analysis to support these features of the Palm Beach County Comprehensive Plan are contained in Chapter II of the support document entitled "Linked Open Space Program." The information contained in the support document is drawn from the work of the Loxahatchee Greenways Natural Resources Task Force. Specific recommendations developed by the Loxahatchee Greenways Natural Resources Task Force are presented in the table below:

ORDINANCE NO. 97-49

RECOMMENDED OPEN SPACE LINKS		
Large Animal/Ecological Greenway Corridors	<p>A 200,000-acre greenway network, including:</p> <ul style="list-style-type: none"> • Jonathan Dickinson State Park/J.W. Corbett Wildlife Greenway, connecting through Pal-Mar; • Cypress Creek hydrologic link between Northwest fork of Loxahatchee River and headwaters in Pal-Mar; • Jonathan Dickinson State Park/West Palm Water Catchment Area, including public acquisition of Loxahatchee Slough; • WPB Water Catchment Area/Corbett Area; and • Corbett Area/Loxahatchee Nat'l Wildlife Refuge (exact boundaries to be determined; private land with agricultural uses to continue.) 	<ul style="list-style-type: none"> • Minimum width of one kilometer (3300 feet); actual widths to be determined on a case-by-case basis. (Type of animal to be supported should determine width, i.e., FLA Panther, 6+ miles; Bobcat and Black Bear, 2.3 miles.) • Minimum buffer of 660 feet of compatible land uses. • May contain wetlands, uplands, native vegetation. • May support hiking and nature appreciation (determined case-by-case); but motorized vehicles banned. • Means to achieve: conservation easements, life estates, transfer of development rights, tax incentive programs, acquisition through Save Our Rivers or other funding programs, County Trail Coordinator.

Source for location of Ecological Greenways, minimum widths: "Loxahatchee Greenways Natural Resources Assessment - Interim Report to the Florida Greenways Commission", the Loxahatchee Greenways Natural Resources Task Force, April 29, 1994.

Some of the Conservation/Ecological Greenways or Wildlife Corridors described in this section contain privately owned lands. These lands are presently primarily in active agricultural use or contain a mixture of wetlands and undeveloped areas designated for future industrial or residential use.

Lands contained within these corridors with designations of industrial or residential are permitted to develop, but are guided in that development by design standards contained within the Unified Land Development Code which encourage the preservation of an open space corridor. The legal descriptions of those lands are located within the support document entitled "Linked Open Space Program."

Lands contained within Linked Open Space corridors but presently designated as Agricultural Production must receive a different land use designation prior to proceeding through the Development Review Process. As those lands enter the Development Review Process, the design provisions contained within the Unified Land Development Code will guide the preservation of a corridor within the permitted development.

The general overall description of those lands included within the Linked Open Space Corridors is contained within the Table entitled "Recommended Open Space Links, which precedes this section.

ORDINANCE NO. 97-49
Conservation Greenway/Upland Set-Asides

This portion of the Linked Open Space Program is intended to implement the provisions of Objective 2 of the Conservation Element of the Palm Beach County Comprehensive Plan, which requires the

County to preserve and protect native upland habitat of each community type. The recommendation of this portion of the Linked Open Space Program calls for modification of the County's Development Review Process to consider the desirability of requiring an upland set-aside for a proposed development to locate adjacent to an existing preserved upland. The data and analysis supporting this recommendation are contained within Chapter III of the support document entitled "Linked Open Space Program."

Airport Preserve

This area is recommended to be included within the Linked Open Space network. The Development Order for the County's North County Airport contains a number of requirements regarding the environmentally sensitive lands adjacent to the Airport. A preserve area enclosing approximately 900 acres has been set aside, and a management plan is presently under development by the staff of the County's Department of Environmental Resources. Most of the existing environmentally sensitive areas are contained within 700 acres in the western portion of the Preserve; areas in the east will require restoration.

The management plan to be prepared will emphasize some flexibility, to allow for future passive recreational uses. Controlled access will be needed, however, to assure that damage will not be done.

- [4] For additional information on the Linked Open Space Program, consult the Introduction/Administration, Land Use, Traffic Circulation, Mass Transit, Recreation & Open Space, Intergovernmental Coordination and Capital Improvements elements. The map entitled "Linked Open Space Map" is contained within the Land Use Element.

The Loxahatchee Slough and River Corridor

The Loxahatchee Slough is one of the last natural riverine swamp systems on the east coast of Florida. It is the remnant of an extensive natural wetland system that once reached from the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Water Conservation Area 1) to the Loxahatchee River in northern Palm Beach and southern Martin Counties. The Hungryland Slough was the western branch of the system, connecting the Loxahatchee Slough with the area now known as the J. W. Corbett Wildlife Management Area. Presently, the Slough and River Corridor system stretches from north of the West Palm Beach Water Catchment Area to the Northwest Fork of the Loxahatchee River. The original slough south of Okeechobee Boulevard has long been drained for development. The Slough and River Corridor contains a variety of habitat types including pine flatwoods, cypress forest, and wet prairie. The mixture of upland and wetland habitats provides foraging and nesting sites for wildlife in an area that is in close proximity to urban development. The Slough and River Corridor system is a major portion of the Loxahatchee River headwaters which provides an important watershed for storing surface runoff and providing groundwater baseflow to the C-18 and the Loxahatchee River.

Phase 2 of the South Florida Water Management District's two-phase restoration program for the Loxahatchee River began in 1987. This phase has focused on the protection and enhancement of water quality in the basin as well as the restoration of the Loxahatchee Slough as the headwaters of the river. A major element of Phase 2 has been the establishment of a cooperative relationship between the District and local governments to ensure protection of this area. The County is a member of the District's Loxahatchee River Management Coordinating Council. The Council has developed a set of recommended actions that will protect and preserve the Loxahatchee Slough system. The County has acquired approximately 11,927 acres of the Loxahatchee Slough through the Environmentally Sensitive Lands Acquisition Program. Additionally, the County has acquired approximately 367 acres within the river corridor known as the Loxahatchee River Natural Area through the Environmentally Sensitive Lands Acquisition Program. An additional 25 acres of the Loxahatchee River are included as potential acquisition areas under the Save Our Rivers program. The County with assistance from the District has begun drafting a conceptual management plan for the Slough. The plan will inventory resource information, list goals and objectives for overall management, and identify management responsibilities. In addition, it will specify management needs with regard to prescribed burns, exotic vegetation eradication or removal, and public use. The District will contribute information concerning hydrology and hydrologic restoration needs.

ORDINANCE NO. 97-49

B. — Air Quality

Since the late seventies, Palm Beach County has been in compliance with all the National Ambient Air quality Standards with the exception of ozone. As a result of the 1990 Clean Air Act Amendments, Southeast Florida was designated as a "Moderate" ozone nonattainment area with the requirement that attainment be achieved by 1996. During the early 1990s, several new control measures were implemented nationally and locally that would result in ozone air quality improvements. Because of the air quality improvements, the area demonstrated compliance with the ozone standard. Acting on the request submitted by the Florida Department of Environmental Protection (DEP), the US Environmental Protection Agency redesignated the Southeast Florida as an "attainment area" effective April 25, 1995. Future projection of pollutant emissions indicates that the County will be able to maintain this status for at least the next ten years.

In an effort to protect air quality and manage air pollution problems, the Palm Beach County Public Health Unit (PBCPHU), which is an approved 'local pollution control program' pursuant to Florida Statutes, Section 403.182, and Florida Administrative Code, Rule 62-209, implements the air pollution control program through a Specific Operating Agreement with the Department of Environmental Protection (DEP). The PBCPHU enforces the State and Local air pollution laws in the County in implementing the program. The PBCPHU will continue to monitor the ambient air quality, regulate mobile and stationary sources of air pollution, administer asbestos and open burning regulations, and handle citizen complaints. The PBCPHU will remain active and serve on Transportation Planning Committees and coordinate with local, state and federal agencies on implementing additional Transportation Control Measures designed to maintain acceptable air quality levels.

Palm Beach County has 30 major permitted air pollution sources which have the potential to emit greater than 100 tons per year of one or more air pollutants. There are also approximately 70 minor air pollution sources which emit small quantities of air pollutants which when combined also have a significant impact on the atmosphere. In addition, the PBCPHU will be responsible for approximately 225 new area sources of hazardous air pollutants pursuant to Title III of the Clean Air Act Amendments of 1990 in the next five years.

As a new initiative, PBCPHU commenced a "Pollution Prevention (P2) program in the County. The P2 Coalition of Palm Beach County was formed to enhance the program. The PBCPHU serves as staff to the coalition in the implementation of P2 programs designed to improve efficiency, waste minimization, energy conservation and to ultimately reduce the operating costs at the source. This will be achieved through voluntary participation by both the public and private sectors.

The widespread growth in Palm Beach County has resulted in localized air pollution problems from time to time. Large vacant lots, unpaved roads and open burning of land clearing debris has caused dust and smoke problems locally. These issues need to be examined closely. The PBCPHU will coordinate with the County in the development of more stringent policies or codes to minimize these problems.

C. — Groundwaters

Total water use in Palm Beach County during 1990 was 346,654 million gallons per year (mgy). Seventy-two percent (72%) of this use was agricultural and about 51% of the County total was used by sugar growers. Other agricultural uses include vegetables, sod, citrus, ornamental nurseries, and rice. Agricultural water use is projected to decline by 4% over the next twenty years. The most significant decline is projected to occur in water use for sugar. Modest increases in water use are projected for sod, rice and ornamental nurseries.

Urban water use is projected to increase by 94% in this same period. The greatest increase is projected for public water supplies, followed by residential self-supplied. Public water supplies represent 18% of the 1990 demand and will represent over 30% of the 2010 demand.

Palm Beach County has only one principal aquifer system. The Surficial aquifer System contains: 1) the unconfined Biscayne Aquifer located in southern Palm Beach County and 2) the undifferentiated Water Table Aquifer located throughout the rest of the County. The Floridan Aquifer System

ORDINANCE NO.

97-49

underlies all of Palm Beach County however, it is too mineralized for drinking purposes (not potable) and therefore, it is not a feasible choice for supplying potable water. In general, the Surficial Aquifer System is composed of unconsolidated sand and shell units interbedded with carbonate rocks. The carbonate rocks represent the water producing zones. The Biscayne Aquifer is the sole source of potable water for southern Palm Beach County. It is recharged by direct infiltration of rainfall and canal inflow. Ground water recharge from the canal system is possible because of the high permeability of the aquifer and its proximity to the surface. These same factors make the aquifer extremely susceptible to both saltwater intrusion and contamination from surface sources.

Saltwater intrusion is being controlled in the County. The SFWMD holds water in its canals at levels sufficient to maintain ground water levels as an hydraulic barrier to protect wellfields from saltwater intrusion. The SFWMD also utilizes its water use permitting program to limit withdrawals considered likely to promote movement of the saltwater intrusion line landward.

Palm Beach County has adopted the Unified Land Development Code with a Wellfield Protection Ordinance that restricts land uses and the use of regulated substances within zones of influence of potable water wells. Because the County has a Wellfield Protection Ordinance, the SFWMD's efforts in the area of source protection are directed toward the issue of aquifer protection. This is focussed on the identification and protection of high and prime recharge areas for aquifers. SFWMD has prepared a map for southeast Florida representing prime aquifer recharge areas. The map is included in the Comprehensive Plan Map Series.

The Turnpike Aquifer Protection Overlay (TAPO) District was established to safeguard the northern extension of the Biscayne Aquifer, one of the most productive portions of the surficial aquifer. The boundary of the overlay is an area south of Northwest 22nd Avenue, north of West Atlantic Avenue, east of the Florida Turnpike, and west of Military trail. All development approvals within this overlay, in conjunction with provisions of the overlay in the Land Use Element, shall be required to identify and, if applicable, dedicate well sites provided the development meets the criteria.

Water supply is a major concern in Palm Beach County. To help solve this problem, the SFWMD is engaged in the development of the *Lower East Coast Regional Water Supply Plan (LECRWSP)*. The purpose of LECRWSP is to evaluate the complex issues associated with water supply, including the demands of the natural environment, agriculture, and urban areas.

Increased use of reclaimed water is one alternative that might be used more fully in the County. Reclaimed water could possibly be used for irrigation, industrial cooling, saltwater intrusion barriers, ground water recharge, and wetlands restoration. Another option being explored is backpumping stormwater runoff to storage reservoirs for later use.

With increasing water use, natural systems dependent upon water have become degraded as sufficient quantities to support the natural systems become unavailable. Natural areas and other open spaces are also important as groundwater percolation (recharge) areas. The preservation of recharge areas and the use of on-site stormwater retention/detention help to replenish water supplies.

Innovative and practical conservation techniques, as well as public education programs, must be utilized in order to conserve and provide an adequate water supply for all water users in the County. Water conservation techniques include the use of native drought-tolerant landscaping (xeriscaping), the use of irrigation quality (IQ) water reuse for irrigation, limiting times of watering and the use of flow plumbing fixtures. Public education about water conservation must be stressed at all levels.

Groundwater supplies are more abundant and readily accessible in the eastern part of the County, as discussed in the Potable Water Sub-element. Clustering development in the eastern part of the County, and maintaining reduced densities in the western areas will direct growth where the major groundwater supplies are available.

The County has been actively involved with several pollution prevention activities including participation with various "P2 Programs". These activities serve to enhance water protection efforts beyond typical regulatory functions. It is imperative the County continues to participate in pollution prevention activities. The County must develop a structured "P2 Program" in order to broaden existing water protection efforts.

ORDINANCE NO. 97-49

D. — Estuarine Marshes and Marine Habitats and Fisheries

In Florida, estuaries are composed of five major aquatic ecosystems: mangrove swamps, salt marshes, seagrass beds, tidal flats and oyster beds. Estuaries in the County are important because they contain all of the highly productive communities mentioned above. The main estuaries in the County are the Loxahatchee River, Lake Worth Creek, Indian River Lagoon Aquatic Preserve, Lake Wyman lagoon, and Lake Boca Raton Lagoon.

Marine ecosystems consist of open water and bottom-associated communities. Important hard bottom marine communities in Palm Beach County's coastal waters are the live bottom areas of rocky substrates, the tropical coral reef communities, and the shallow water wormrock reefs.

The County consists of approximately 72.5 Km. (45 miles) of oceanfront shoreline. A total of 39 Km. of nearshore reefs have been calculated throughout the County, encompassing approximately 54% of the shoreline. Numerous fish, algae, and invertebrate species have been identified in these areas.

Estuaries are heavily used by recreational boaters and are important to marine industries. The estuaries are prime locations for boat facilities, waterfront development and other water-related activities.

Estuaries and marine areas serve as important habitat areas for birds, fish, shellfish, marine turtles, marine mammals, and other wildlife. Additionally, estuaries serve as valuable recreation, fishing, and nursery areas for fish and shellfish caught commercially in the Atlantic Ocean. Estuaries in the County are particularly important for 72% of the County's commercial fish species and 74% of the recreational fish species. Estuaries are heavily used by recreational boaters and are important to marine industries. The estuaries are prime locations for boat facilities, waterfront development and other water-related activities. In Palm Beach County, most of the estuarine areas have been destroyed or degraded by dredge and fill activities or by the construction of seawalls. The areas that have not been substantially altered by development projects are found in scattered locations along the Intracoastal Waterway, Lake Worth (including John D. MacArthur State Park), the Loxahatchee River/Lake Worth Creek Aquatic Preserve, the Indian River Lagoon Aquatic Preserve (from Jensen Beach to Jupiter Inlet), and the Lake Wyman area in Boca Raton.

The health of the County's estuaries and marine ecosystems is affected by urban and agricultural runoff, freshwater discharges from canals that alter the freshwater/saltwater balance, dredge and fill projects, and other practices that impact shoreline vegetation, bottom vegetation, and water quality. The County administers the Wetlands Protection Regulations which provides protection to wetlands. The Environmentally Sensitive Lands Acquisition Program provides for the continual acquisition, protection, and conservation of high quality native ecosystems, including wetlands. Strict enforcement of current regulations and improved management practices to control drainage and runoff impacts are vital to protecting and restoring estuaries and marine habitats. Such practices are described in greater detail in the County's Coastal Management Element.

E. — Soils and Minerals

Organic soils, among the most productive in the United States, cover the western portion of the County. These are peat soils of varying thickness, overlaying limestone or shell, that are slowly compacting and decomposing through oxidation. Soil subsidence (increasing oxidation rate and decreasing soil level) greatly affects the degree to which agriculture is profitable and productive. The end result of continued soil subsidence is the exposure of underlying rock. The erosion of unstabilized waterway banks and construction sites must be addressed. This situation will have three consequences for Palm Beach County: 1) the amount of soil will gradually decrease; 2) more extensive treatment of soils will be required; and 3) adjustments in land use practices will be necessary.

According to the Palm Beach Soil and Water Conservation District, there are two types of erosion affecting Palm Beach County: wind erosion and water erosion. Wind erosion primarily occurs in the agricultural production area in the Glades region. Both wind and water erosion occur throughout the County in the development process between land clearing and site development. Water erosion also occurs around Interstate 95 overpasses due to the slope of the embankment. Additionally, water erosion occurs on the banks of the Intracoastal Waterway due to excess wave erosion in the area.

ORDINANCE NO.

97-49

The Palm Beach Soil and Water Conservation District is embarking on an experimental program to replace the eroded vegetation underneath the Interstate 95 overpasses. The County will use the findings of the District's experiment to prevent erosion along County roadways.

The nature and extent of commercially valuable minerals in Palm Beach County is documented in the Natural Resources Section of the Land Use Support Document. The limestone mineral and coquina rock mineral resources of Palm Beach County are actively mined. Peat is also mined in the County. A survey of area operators in August, 1986, indicated one peat-mining area and two limestone quarries in operation. The limestone and coquina rock formations are found below the sands of the Atlantic Coastal Ridge. Most of this area has the potential for future mining. However, due to urbanization, mining is no longer economically feasible.

Numerous environmental concerns are associated with mining operations. Peat mining requires removal of all vegetation and drainage of the work area. These activities have impacts on air quality (exhaust/dust emissions), noise levels, soil erosion/runoff, traffic circulation and of greater concern, water quality.

Because the County's drinking water aquifer is unconfined at the surface, any pollutant entering a mining area has direct access to the aquifer. Trapped ancient seawater can be released during mining operations, resulting in contamination of the aquifer. The County has adopted and shall continue to implement excavation and mining regulations to fully protect groundwater, especially in existing or future wellfield areas.

F. — Lakes

Palm Beach County has seven major freshwater lakes that serve, directly or indirectly, as sources of drinking water, surfacewater storage and recreation. These Lakes are: Lake Okeechobee, Lake Mangonia, Clear Lake, Lake Clarke, Lake Osborne, Lake Ida and Lake Okeechellee.

Lake Okeechobee is the second largest freshwater lake located wholly within the continental United States. Approximately one-third of its 730 square-mile area lies within Palm Beach County. The Lake has been called the "liquid heart" of South Florida, serving a variety of sometimes conflicting functions - water supply, sport and commercial fishing, navigation, flood control and wildlife habitat.

The Lake is a very shallow water body, that historically has overflowed its banks when major storms and hurricanes have occurred. As a result of hurricanes in the late 1940s, the U.S. Army Corps of Engineers constructed a 30-foot tall dike around the entire Lake to protect local residents and agricultural lands from devastating floods. Canals were constructed to provide drainage and to provide an outlet for the Lake. Thus, the Lake became a flood control device, as well as the primary water storage area for South Florida. Water is released from the Lake by the South Florida Water Management District according to an operating schedule approved by the Corps of Engineers. Releases are made to control the level in the Lake and to supplement the water supplies in Palm Beach, Broward and Dade Counties.

Lake Okeechobee is the natural storage area for drainage basins that extend northward to Orlando. The Lake is a key component of South Florida's vast Kissimmee-Okeechobee-Everglades surface water hydrologic system. The runoff from agricultural activity, including dairies, within some of these basins has resulted in high levels of nutrients collecting in the Lake. The impacts of the nutrients are algae blooms, increased densities of aquatic plants, and degraded water quality. Historic backpumping of runoff from the Everglades Agricultural Area located south of the Lake, primarily in Palm Beach County, has contributed to elevated nutrient levels. This activity has been eliminated, except in the most severe storm events when flood control is essential.

The severity of Lake Okeechobee's water quality problem was recognized by the state legislature in 1987 when the Surface Water Improvement and Management (SWIM) Act was adopted. This Act identified Biscayne Bay, Indian River Lagoon and Lake Okeechobee as top-priority water bodies that require special attention due to water quality problems. The South Florida Water Management District is the lead agency responsible for developing plans for Lake Okeechobee. The District adopted the Interim Lake Okeechobee SWIM Plan in March 1989 which addressed only two of the seven proposed plan elements (Water Quality and Public Information). The plan focused on a variety of programs to reduce phosphorus nutrient loading and other water management and quality programs. Additionally, the plan focused on implementation of a regulatory and enforcement/compliance phosphorus control program within the tributary basins. Since the Interim

ORDINANCE NO. 97-49

plan, the District has moved forward developing appropriate rules, permitting procedures, and water quality monitoring plans as originally outlined in the plan. The Florida Department of Environmental Protection has developed Best Management Practices (BMP) under their Dairy Rule and the District has implemented the Works of the District Rule (WOD) for non-dairy land uses within the tributary basins, both of which have contributed to the reduction of phosphorus concentrations within the basin. An update of the SWIM Plan was adopted by the District's Governing Board in January 1993. The update outlines research and demonstration programs to improve the district's understanding of the Lake, its health, and nutrient dynamics. It includes goals, objectives, and strategies for each element specified by the SWIM Act. These are: water quality, environmental resources, water supply, flood control, recreation, navigation, and public information. The focus of the update is on the synthesis of research data and evaluation of the effectiveness of phosphorus control strategies, as well as other water quality parameters. The next Swim Plan update is scheduled for completion in 1996 and will outline specific management objectives for Lake Okeechobee based on the results of these studies. As necessary, the County will continue to coordinate with the District to ensure Lake Okeechobee remains a viable natural resource.

Lake Mangonia and Clear Lake are connected and serve the City of West Palm Beach as a water supply. Public recreational activities in these lakes are limited. The other major lakes in the County and their interconnecting canals are used for boating, waterskiing, fishing and for shoreline activities such as picnicking. They have become stressed by channelization of inflowing waters, the elimination of natural surface water fluctuation regimes, the encroachment of urban and residential growth onto the associated riparian areas including wetlands and floodplains, and by nutrient enrichment as discharges of domestic and agricultural wastes have increased. This stress has resulted in algal blooms and excessive growth of nuisance aquatic plants; an increased muck layer on lake bottoms; reduced water clarity and quality; degraded wildlife habitat; and a dramatic decline in the sportfish dominated fisheries. In an effort to better manage and restore the natural resources of these lakes, the County has evaluated the status of its freshwater ecosystems and developed a management plan titled "State of the Lakes" to protect, restore, and enhance the natural resource values the lakes provide. Additionally, the County is striving to work with municipalities to identify and implement shoreline revegetation projects.

G. — Rivers

The Loxahatchee River, located in the northeast portion of Palm Beach County, is the only riverine system in the County. This system is comprised of the Southwest Fork, the North Fork and the Northwest Fork. A 7.5-mile segment of the Northwest Fork is included in the National Wild and Scenic River System. The Loxahatchee River/Lake Worth Creek Aquatic Preserve was approved in 1970. The 210-square-mile Loxahatchee River drainage basin is affected by the C-18 Canal and the system of secondary canals that discharge into the C-14 Canal.

The Loxahatchee River contains a great diversity of both freshwater and estuarine plant and animal species, such as: red mangroves, salt grass, water oaks, cypress, Cuban shoal grass, manatee grass, numerous fish and invertebrates, manatees, turtles, bald eagles, ospreys, and brown pelicans. The most essential component of the Loxahatchee ecosystem is water. The development of canals that altered the river's natural drainage patterns has reduced both the quantity and quality of water in the River. Canal 14, Cypress Creek, the Hobe Groves Canal and Kitching Creek, are the four major tributaries that discharge into the Northwest Fork. The C-18 Canal indirectly discharges to the Northwest Fork through Canal 14, via the G-92 water control structure. According to the 1994 Southeast and South Florida District Water Quality Assessment 305(b) Technical Report, good to fair water quality was generally found throughout the Loxahatchee basin. The water quality in the Loxahatchee River/C-18 Canal is good. The water quality of the Loxahatchee River, including the North Fork and Northwest Fork, is good to fair. Problem areas include a small section of the North Fork of the Loxahatchee River which has low dissolved oxygen concentrations. The estuarine portion of the Loxahatchee River has shown a dramatic decline in the extent of seagrass beds in the last decade.

Although the Loxahatchee River's water quality has been better than that of most other waterways in the County, the River has a number of human development-related problems. Reduced water flows at times, diminished water storage capacity from the drainage basin due to development of wetlands, and construction of dams, canals and other drainage projects, in addition to the regular dredging of the Jupiter Inlet, have caused saltwater intrusion in the Northwest Fork. Also, development of the

ORDINANCE NO. 97-49

C-18 and Loxahatchee River Basins has led to increased runoff discharges that carry urban and agricultural pollutants. Stormwater runoff discharges have disrupted the freshwater/saltwater balance of the Loxahatchee River estuary.

To ensure the future health of the Loxahatchee River and its tributaries, adjacent land uses and surfacewater runoff must be properly managed. The Loxahatchee River requires a steady and consistent level of freshwater discharge to balance the salinity wedge and control future salinity intrusion.

In recognition of the river's importance and its problems, the South Florida Water Management District has been working to restore the Loxahatchee River to its natural state since 1985. The Loxahatchee River National Wild and Scenic River Management Plan of December 1985 provides for the protection and preservation of the Loxahatchee River. The plan provides for the establishment of a river management program to permanently protect the natural resource value of a 7.5 mile segment of the Northwest Fork of the Loxahatchee River and a corridor of adjoining uplands. The Loxahatchee River Management Coordinating Council is currently working on the 1995 update of the plan to ensure that the objectives and measures of the management program remain relevant in achieving the plans preservation and enhancement goals. The South Florida Water Management District has purchased most of the private lands along the Northwest Fork. The South Florida Water Management District's two-phase restoration program for the Loxahatchee River addresses both water quality and quantity.

Four objectives guide this effort:

- o To increase the duration of freshwater flows to the Northwest Fork of the river, to recreate the natural freshwater habitat;
- o To reduce freshwater discharges to the Loxahatchee estuary via Structure S-46 and the Southwest Fork of the river, to provide a more natural balance of freshwater and saltwater in the estuary;
- o To restore the functional role of the Loxahatchee Slough as the headwaters of the river and enhance surfacewater resources for the basin; and
- o To enhance and protect the quality of the water in the basin.

Phase 1, restoration of Northwest Fork, has been completed, and the first two objectives are being met. Over 1,500 acres of environmentally sensitive land have been acquired by the District within the river floodplain. The District has also reconstructed the Lainhart and Masten Dams to improve the water flow through the river. The District's G-92 Structure has been improved to provide additional freshwater flow to the Northwest Fork of the river and to reduce the freshwater flow into the Southwest Fork. Extensive studies on the water supply and drainage requirements of the Loxahatchee River Basin have been completed. The latter work has facilitated the restoration and maintenance of base flows to the Northwest Fork. In combination with other measures, the enhancement of flows to the Northwest Fork should help to stem the progress of the saltwater which has advanced upstream in recent years.

Phase 2, restoration of the Loxahatchee Slough as the headwaters of the river, began in 1987 by the District and is further discussed in the Loxahatchee Slough and River Corridor section.

H. — Floodplains

For the purposes of this Plan, floodplains are defined as those areas inundated during a 100-year flood event or identified by the National Flood Insurance Program as "A" or "V" zones on the Flood Insurance Rate Maps and Flood Hazard Boundary Maps.

ORDINANCE NO. 97-49

Development in the floodplains of Palm Beach County is subject to, and dependent upon, regulations and drainage structures designed to minimize flooding risks. The County Unified Land Development Code and Building Code requires that structures be built on raised pads to achieve specific ground-level elevations. The water control districts in the County regulate the design and flow of canals and waterways to provide flood protection during certain storm events. The County's Flood Damage Prevention Ordinance includes standards for controlling developments that could potentially increase

risks to health, safety and property from water or erosion hazards.

The County's system of construction standards for drainage canals will protect the public and property up to the design limits of these methods. In cases of severe storms, flooding will occur. Also, increased development necessitates additional flood control projects. New development in the C-51 and C-18 basins is particularly environmentally damaging because such development causes more stormwater runoff and large quantities of freshwater that disturb the estuarine saltwater/freshwater balance upon which fish and other wildlife are dependent. New developments in all parts of the County also cause stormwater runoff, which generally collects in the Lake Worth Lagoon and the Intracoastal Waterway. Additional on-site water detention/retention structures and requirements and the protection of open space areas for groundwater recharge are methods that will reduce the amount of stormwater runoff and the need for environmentally damaging flood control projects.

I. — Hazardous Wastes

The United States Environmental Protection Agency (EPA) regulates hazardous wastes under the Resource Conservation and Recovery Act (RCRA). Hazardous wastes are defined in Title 40 Code of Federal Regulations, Part 261 and are generated when a hazardous material can no longer be used for its intended purpose, abandoned, spilled or discarded. In Palm Beach County, hazardous materials are used daily by industries, small businesses, public agencies and homeowners. Pollution problems arise from the improper identification, generation, handling, transportation, and disposal of hazardous wastes. Improper disposal of hazardous wastes promotes the contamination, and in some instances, the destruction of natural resources. The State of Florida, through the Florida Department of Environmental Protection (DEP), is authorized by EPA to implement the RCRA program pursuant to Chapter 62-730, Florida Administrative Code. The DEP regulates, through enforcement and permitting, the generation, transportation, treatment, storage and disposal of hazardous wastes. The DEP Southeast District Office encompasses Palm Beach County.

Since 1987 the Palm Beach County Public Health Unit (PBCPHU) has regulated the commercial and industrial generation of hazardous waste through a County wide inspection and licensing program. Compliance with Hazardous Waste Regulations is achieved through DEP and PBCPHU educational efforts (materials and instructional information) and enforcement actions. The PBCPHU utilizes the Palm Beach County Environmental Control Hearing Board or Circuit Court for adjudication, while the DEP uses Administrative Procedures pursuant to Chapter 62-103 and Circuit Court. The DEP also has criminal enforcement capabilities.

In 1989, Chapter 381, Florida Statute required the PBCPHU to regulate through permit on-site sewage disposal systems (OSDS) in any area zoned or used for industrial or manufacturing purposes, or its equivalent. The collection and analyses of samples from within and around such systems is required by the PBCPHU. This monitoring program ensures that hazardous waste or industrial waste is not disposed of in an OSDS.

Since 1991 the Solid Waste Authority of Palm Beach County has provided permanent Household Hazardous Waste Collection Centers throughout the County. These centers allow for a simple and safe disposal method for homeowners and small businesses.

On February 7, 1995, the Solid Waste Authority of Palm Beach County through agreement transferred the Identification, Assessment and Notification of Small Quantity Generators of Hazardous Waste Program in accordance with Sections 403.7234 and 403.7225(16), Florida Statutes to the PBCPHU for consolidation. The PBCPHU will continue to operate these programs to provide a better level of service to the public, in a more efficient manner by eliminating duplication of efforts by the agencies.

Through the organization and continuing efforts of the Palm Beach County Interagency Illegal Dumping Task Force, which consists of representatives of various environmental agencies, the illegal dumping of trash and hazardous waste has continually decreased since 1990.

J. — Vegetation and Wildlife Communities

ORDINANCE NO. 97-49

Three natural physiographic areas occur in Palm Beach County: the Atlantic Coastal Ridge, the

Eastern Flatwoods, and the Everglades. The Atlantic Coastal Ridge is comprised mostly of terrestrial ecosystems. The Eastern Flatwoods are composed of swamp, marsh and terrestrial systems. The Everglades are composed predominantly of freshwater marshes and swamps. The amount and frequency of rainfall, the permeability of the soil and the land elevation determine where terrestrial or wetland systems naturally occur.

The Florida Natural Areas Inventory has described 24 natural communities occurring in Palm Beach County. These communities are: Sandhill, Scrub, Xeric Hammock, Beach Dune, Coastal Strand, Maritime Hammock, Dry Prairie, Mesic Flatwoods, Scrubby Flatwoods, Wet Flatwoods, Hydric Hammock, Wet Prairie, Floodplain Marsh, Slough, Strand Swamp, Basin Marsh, Depression Marsh, Dome Swamp, Beach, Coral Reef, Worm Reef, Seagrass Beds, Tidal Marsh, and Tidal Swamp.

The results of a study conducted by the Florida Game and Freshwater Fish Commission published in 1994 indicate that the County has 333,697 acres of existing conservation lands accounting for 26.72% of the County's total area. Additionally, the report indicates that the County has 26,182 acres of land known as Strategic Habitat Conservation Areas which are recommended for additional protection and account for 2.09% of the County's total area. The study included area figures in square kilometers for some of the County's land cover types and are presented in the following table:

**TABULATION OF LAND COVER TYPES IN PALM BEACH COUNTY AND
CONSERVATION LANDS WITHIN THE COUNTY.**

NATURAL UPLAND COVER TYPES	PALM BEACH COUNTY	CONSERVATION
Dry Prairie	139	35
Pinelands	301	186
Xeric Oak Scrub	1	0
Hardwood Hammocks	58	20
WETLAND COVER TYPES		
Freshwater Marsh	937	842
Cypress Swamp	24	14
Hardwood Swamp	15	2
Shrub Swamp	204	160
OTHER COVER TYPES		
Open Water	705	16
Grass and Agricultural Lands	2,170	28
Shrub Brush	24	0
Exotic	14	4
Barren Lands	1,056	13
TOTAL:	5,648	1,320

Please Note: Area figures are in square kilometers. There are approximately 247 acres per square kilometer.

SOURCE: Gilbert, Terry. (1994), Closing the Gaps in Florida's Wildlife Habitat Conservation System, (Florida Game and Fresh Water Fish Commission), _____.

The destruction and degradation of native vegetation and wildlife habitat through various forms of land alteration, water table lowering, and the quality of water entering these areas are the major threats to the County's native vegetation and wildlife. Land alterations generally include land clearing, drainage, dredging and filling. By disturbing vegetation, leaving open ground, such activities

ORDINANCE NO.

97-49

~~foster invasion of disturbed areas by invasive non-native plant species and erosion. These exotic species displace natives and offer little or no food, protection, or habitat to wildlife. Development continues to occur thus increasing the percentage of habitat altered or destroyed. Due to the history and rate of vegetation destruction, it is urgent that portions of each ecosystem in the County be preserved. Once lost, the plant and animal species diversity, groundwater recharge capacity, recreational and educational opportunities and even the possibilities of discovering new life-saving drugs from yet unstudied species unique to our area, are irretrievable.~~

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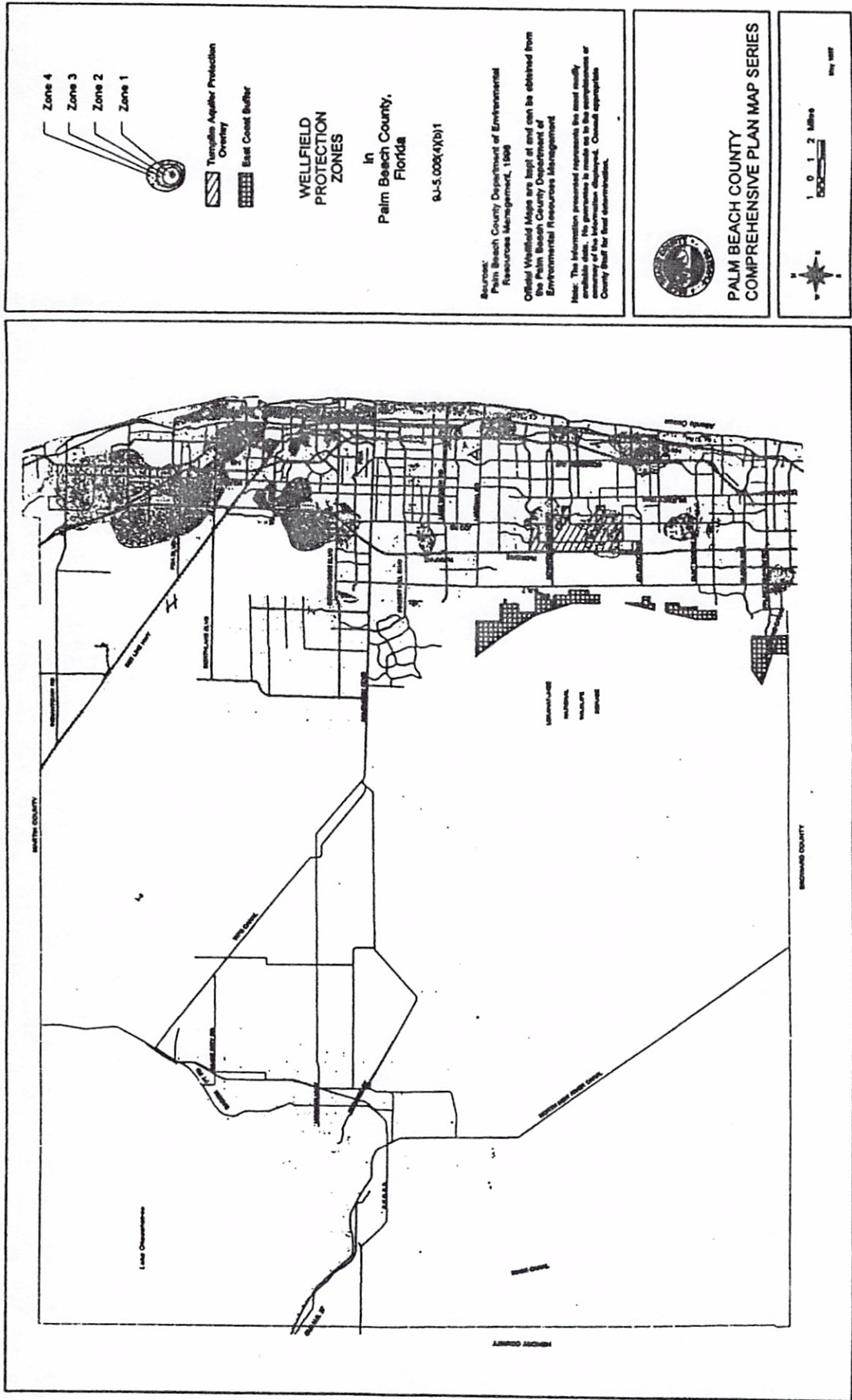
ORDINANCE NO. **97-49**

E. Comprehensive Plan Map Series, EAR Based revisions, additions, and deletions.

- 1. Revised/Updated Map 1 Wellfield Protection Zones**
- 2. Revised/Updated Map 2 Major Wetlands and Estuarine Marshes**
- 3. Revised/Updated Map 3 Flood Plains**
- 4. Revised/Updated Map 4 Soils**
- 5. Revised/Updated Map 20 Future Solid Waste Service Areas**
- 6. Revised/Updated Map 23 Aquifer Recharge Areas**
- 7. Revised/Updated and Added Estuarine Marshes Information Map 24 Coastal Resources**
- 8. Revised/Updated Map 25 Hurricane Vulnerability Zone**
- 9. Deleted/Moved to Support Documents Map 21 Drainage Basins and Canals**
- 10. Deleted/Moved to Support Documents Map 19 Existing Solid Waste Facilities**
- 11. Deleted/Moved to Support Documents Map 28 Selected Wildlife Habitats**
- 12. Deleted/Moved to Support Documents Map 32 Municipalities and Adjacent Counties**
- 13. Deleted Map 34 Economic Planning Areas**
- 14. Deleted Parks, Recreation Facilities and Open Space, Map 29**
- 15. Deleted Active Recreational Areas: Community, District, and Regional Parks, Map 30**
- 16. Deleted Passive Recreation Areas: Beach and Regional Parks, Map 31**
- 17. Added Palm Beach County Parks Existing Conditions (1995)**
- 18. Added Palm Beach County Parks Future Conditions (1996 - 2015)**

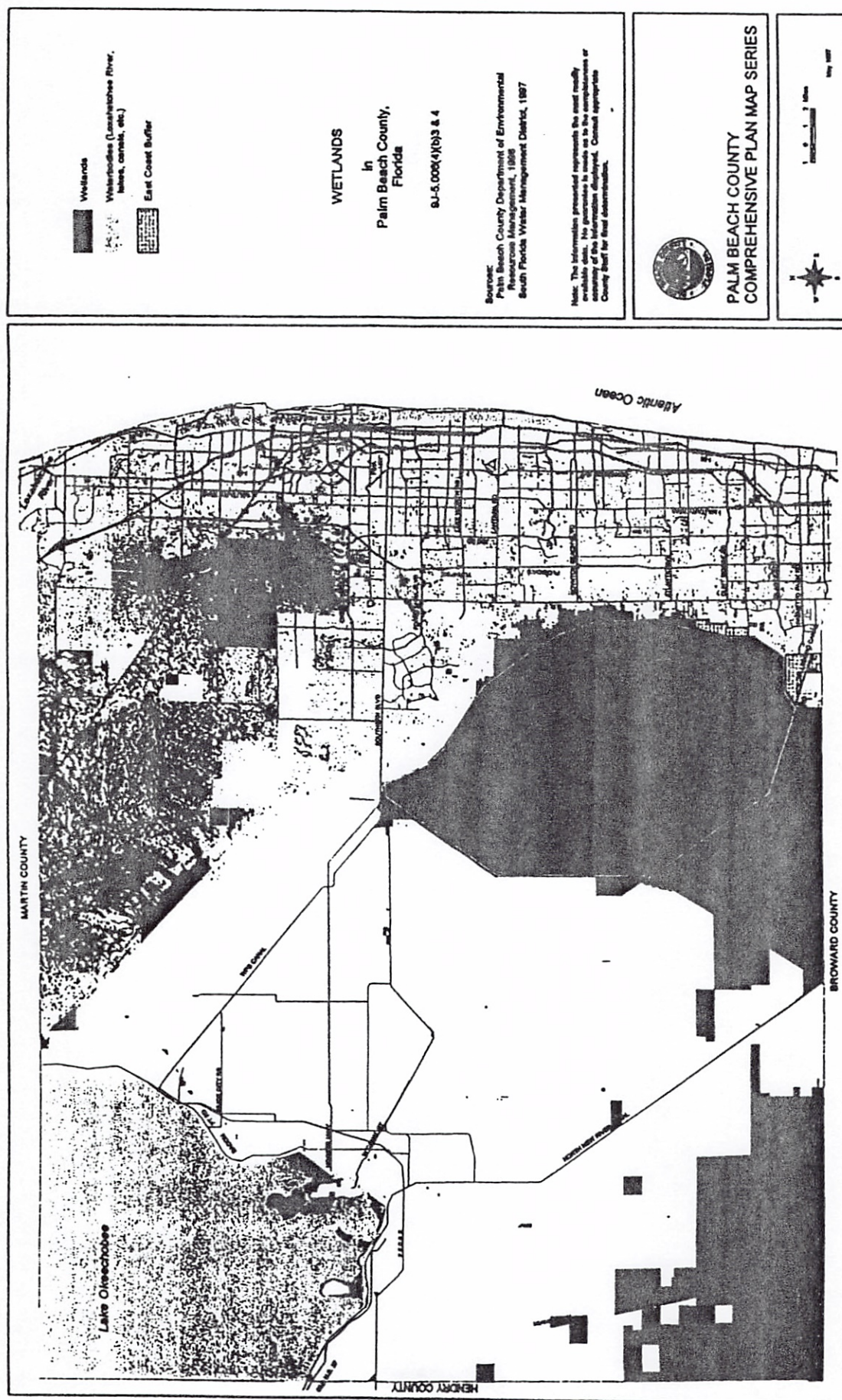
ORDINANCE NO. 97-49

E.1. Revised/Updated Map 1 Wellfield Protection Zones: The resulting map will remain titled: Wellfield Protection Zones



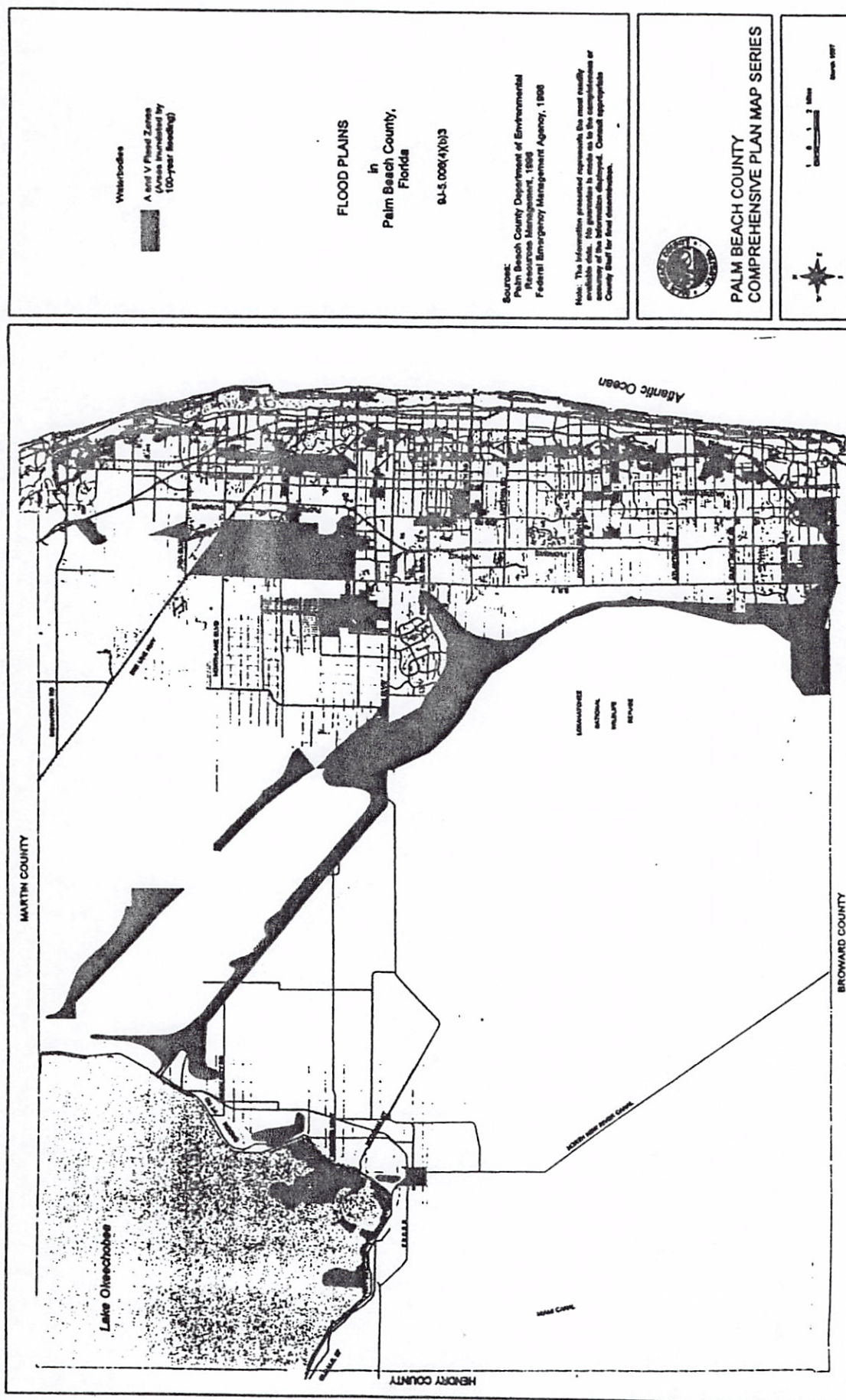
ORDINANCE NO. 97-49

- E.2. Revised/Updated Map 2 Major Wetlands and Estuarine Marshes:** The map has been updated in a digital format and the estuarine feature have been placed on the Coastal Resources Map (see *Map 24*). The revised map will be titled: Wetlands



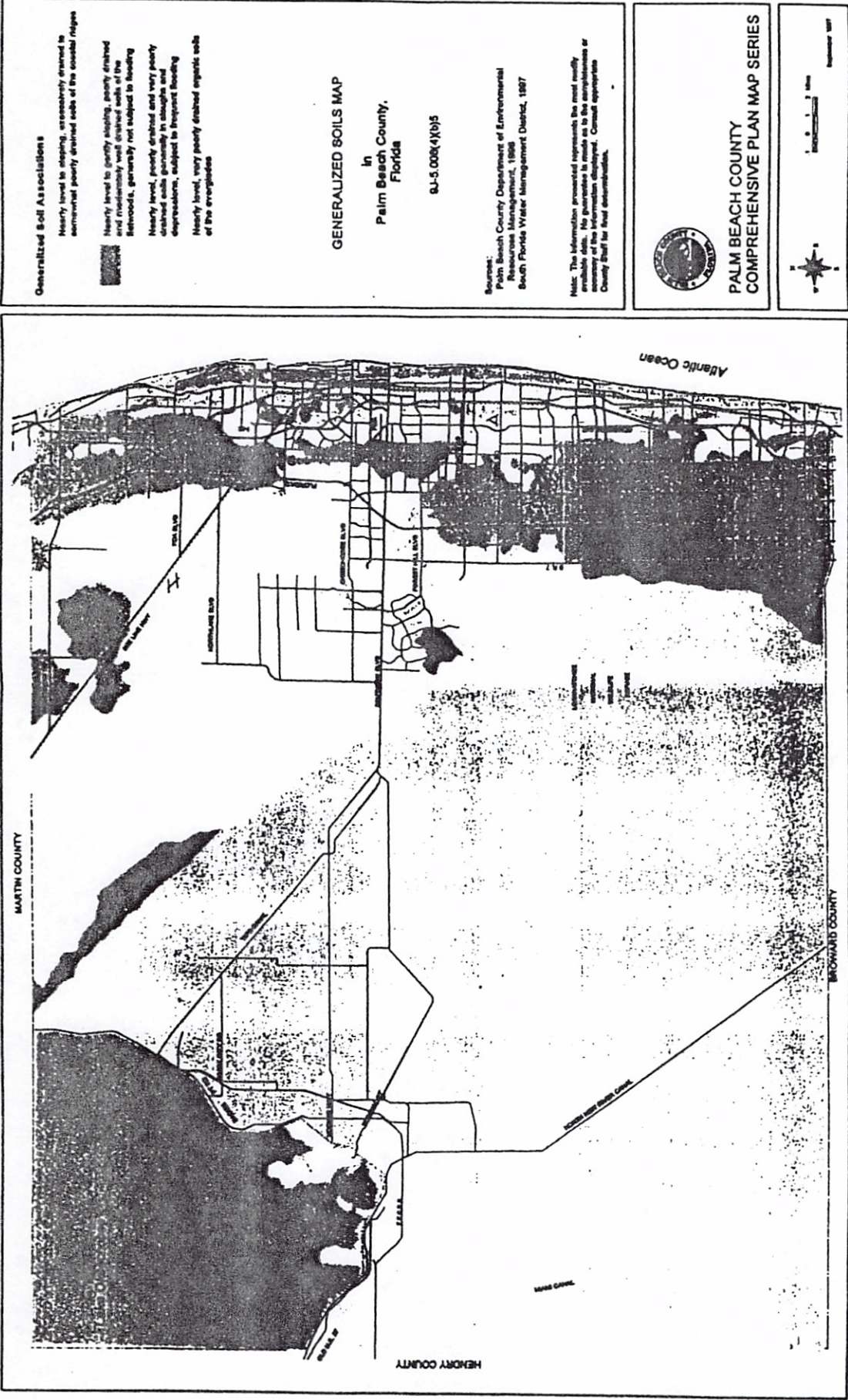
ORDINANCE NO. 97-49

E.3. Revised/Updated Map 3 Flood Plains: The map has been updated to a digital format and will remain titled: Flood Plains



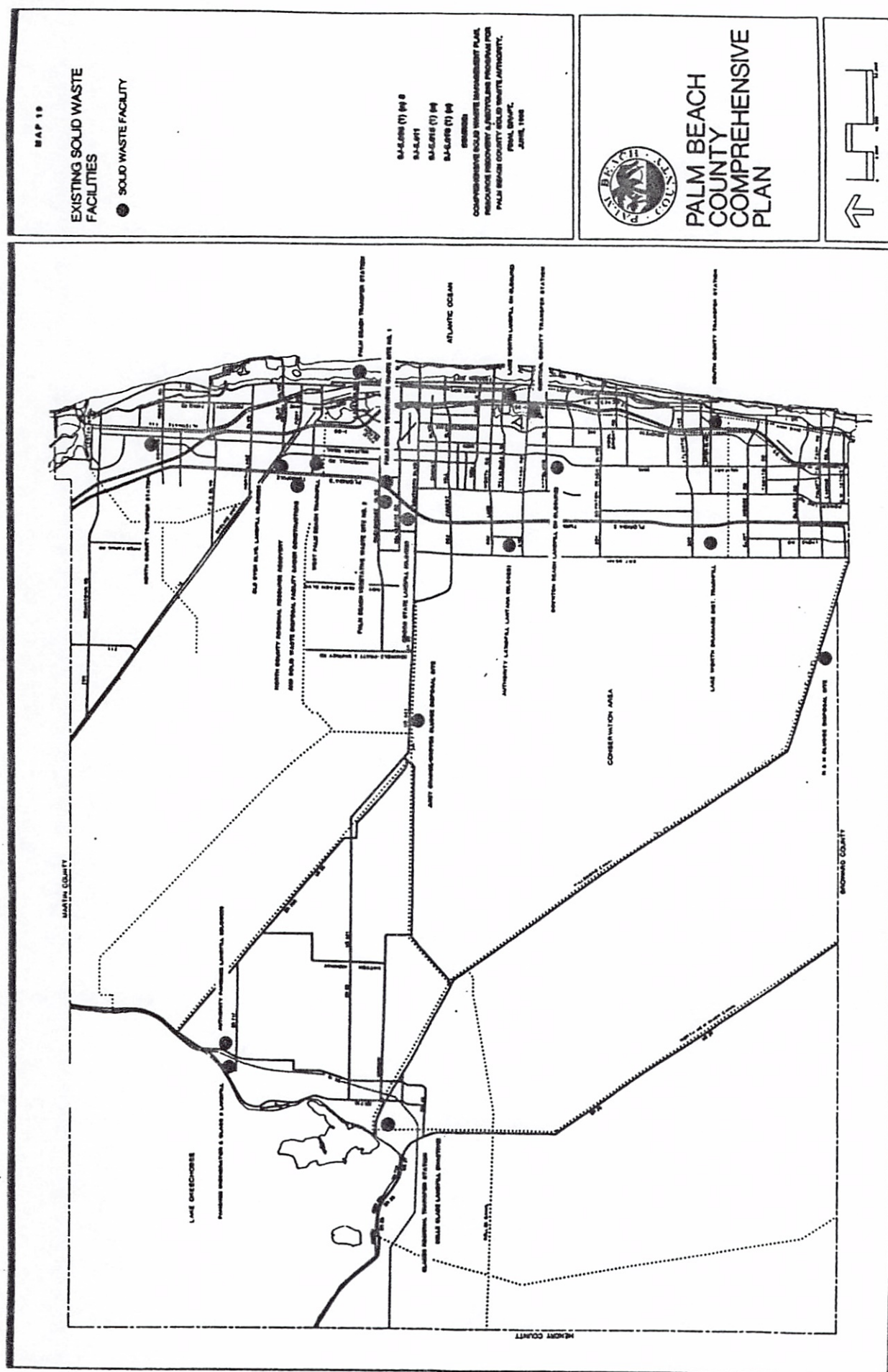
ORDINANCE NO. 97-49

E.4. Revised/Updated Map 4 Soils: The map will remain titled: Generalized Soils Map



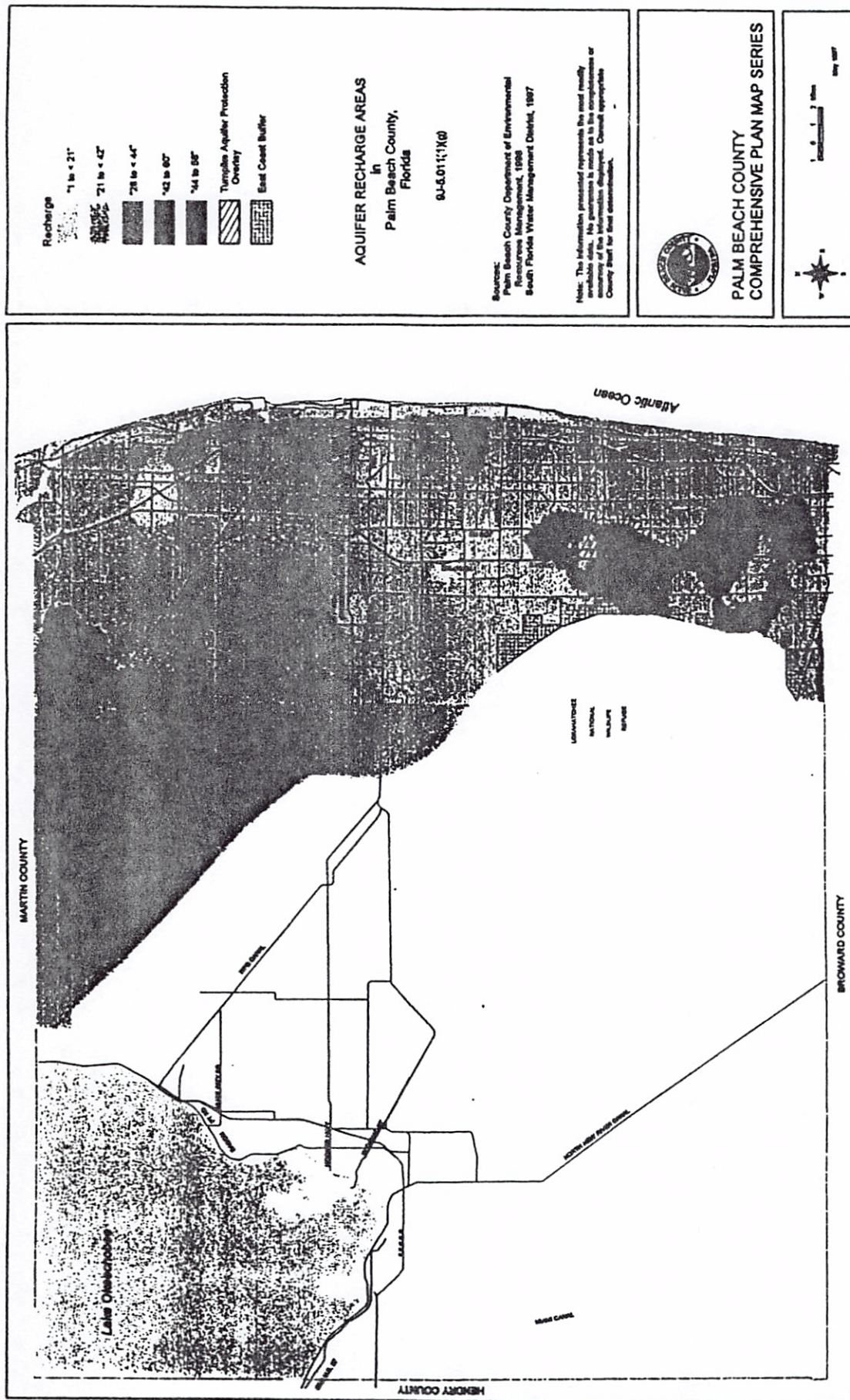
ORDINANCE NO. 97-49

- E.5. Revised/Updated Map 20 Future Solid Waste Service Areas:** The map has been updated to reflect the deletion of the proposed south county landfill site and the inclusion of the proposed western county landfill site. The map will be titled: Existing and Future Solid Waste Facilities



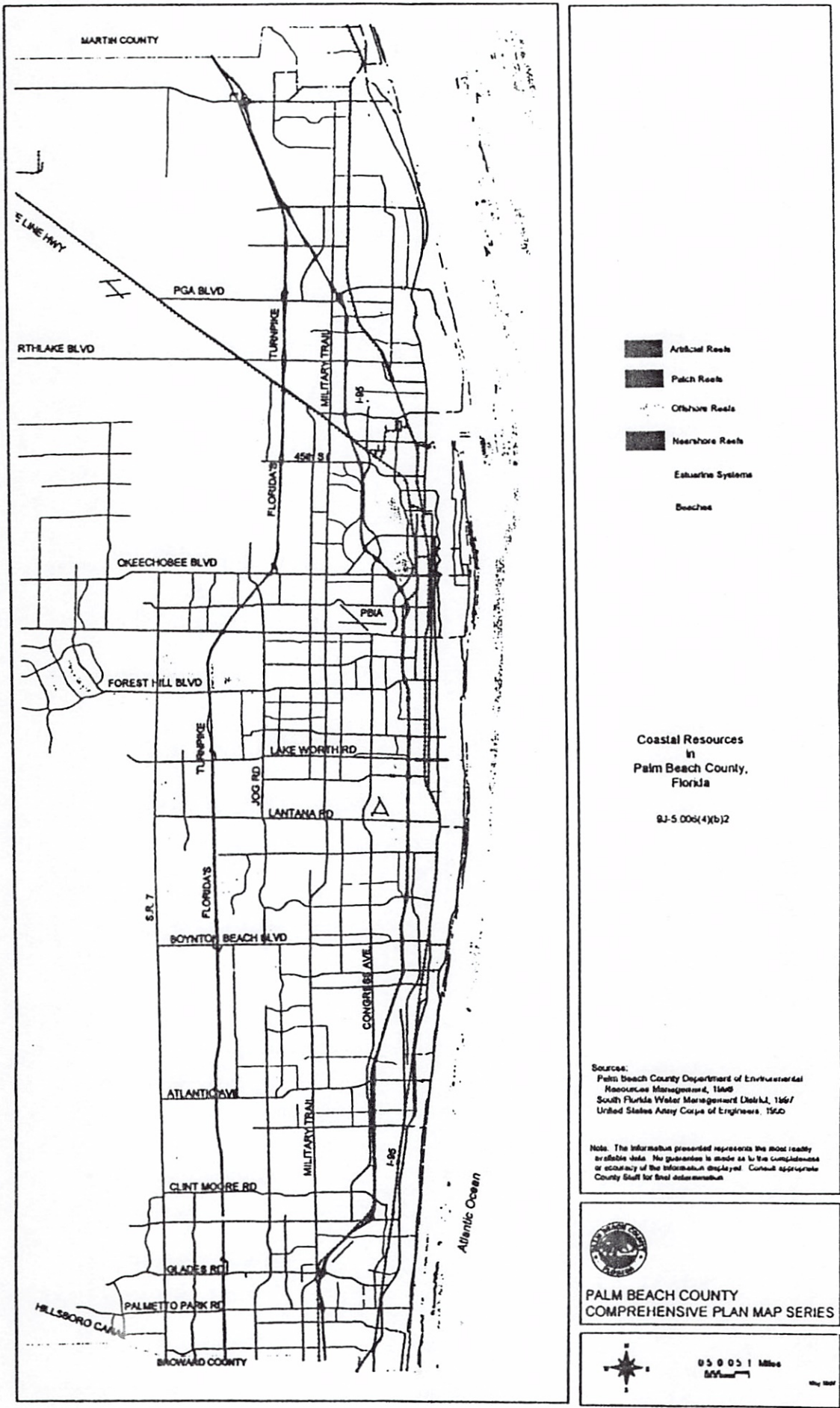
ORDINANCE NO. 97-49

E.6. Revised/Updated Map 23 Aquifer Recharge Areas: The map will be titled: Aquifer Recharge Areas



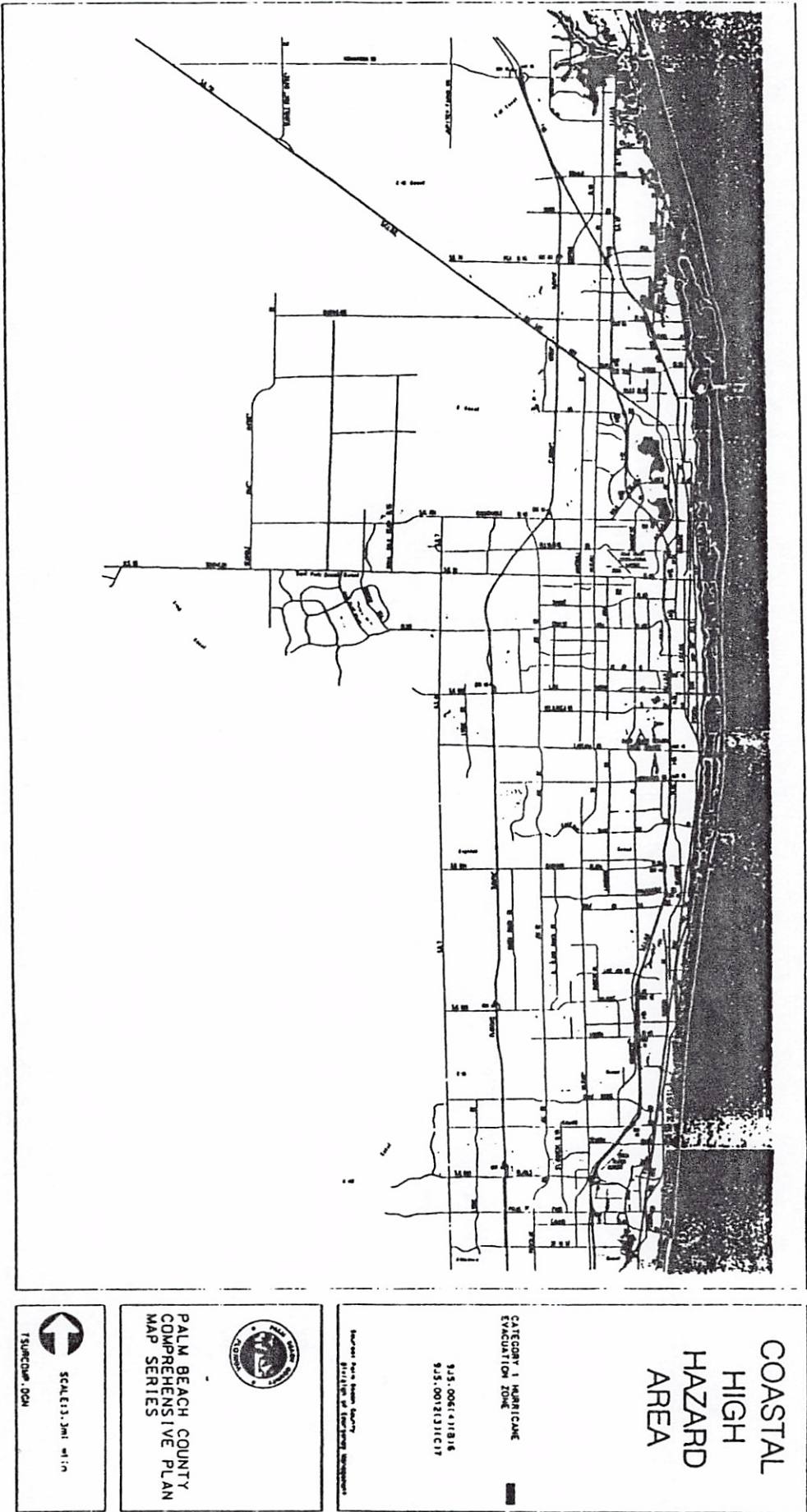
ORDINANCE NO. 97-49

E.7. **Revised/Updated and Added Estuarine Marshes Information Map 24 Coastal Resources:** The map information has been updated and will be combined with the estuarine marshes information from Map 2 (*Major Wetlands and Estuarine Marshes*). This map will remain titled Coastal Resources.



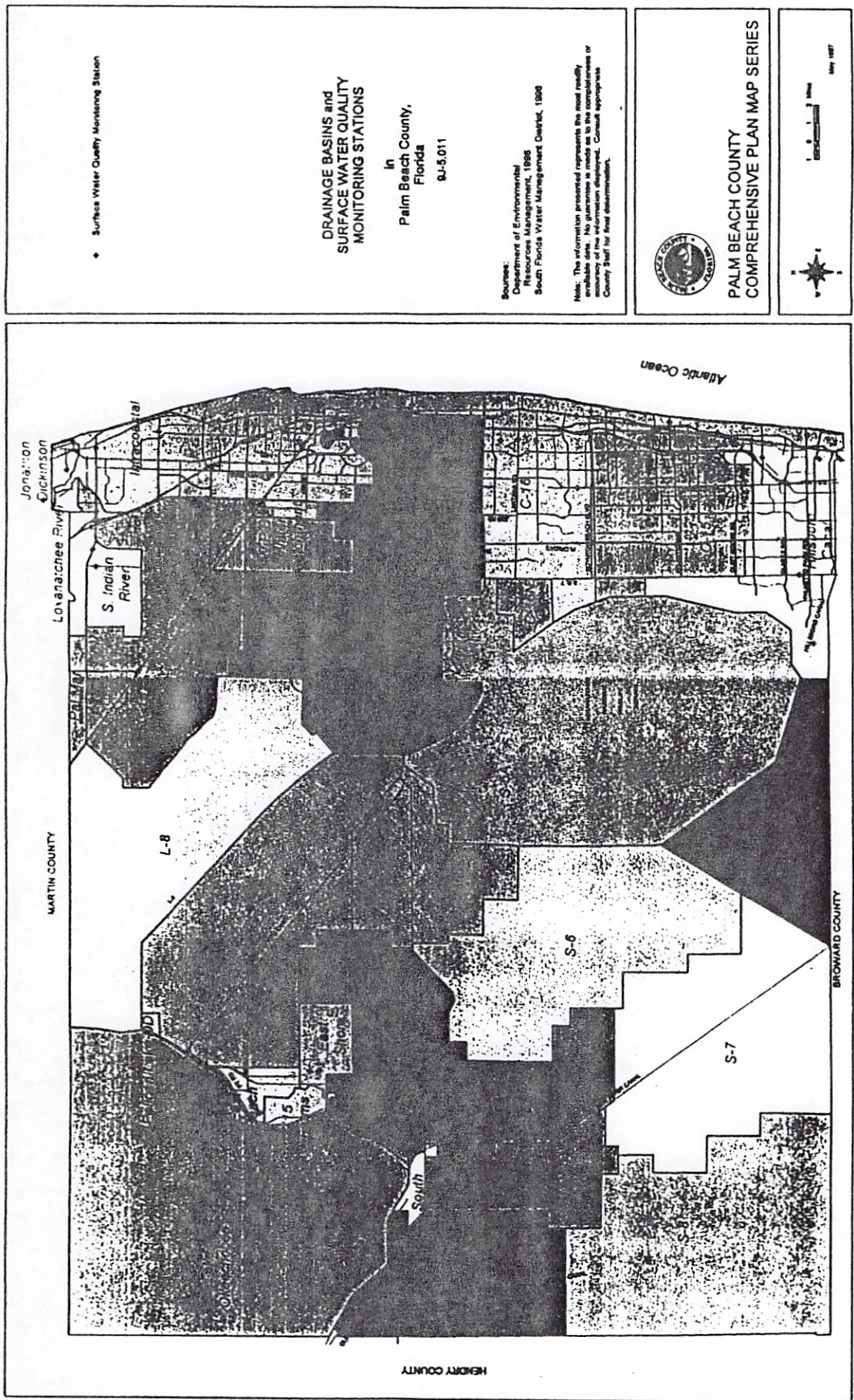
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E.8. Revised/Updated Map 25 Hurricane Vulnerability Zone: The map will be titled: Coastal High Hazard Area



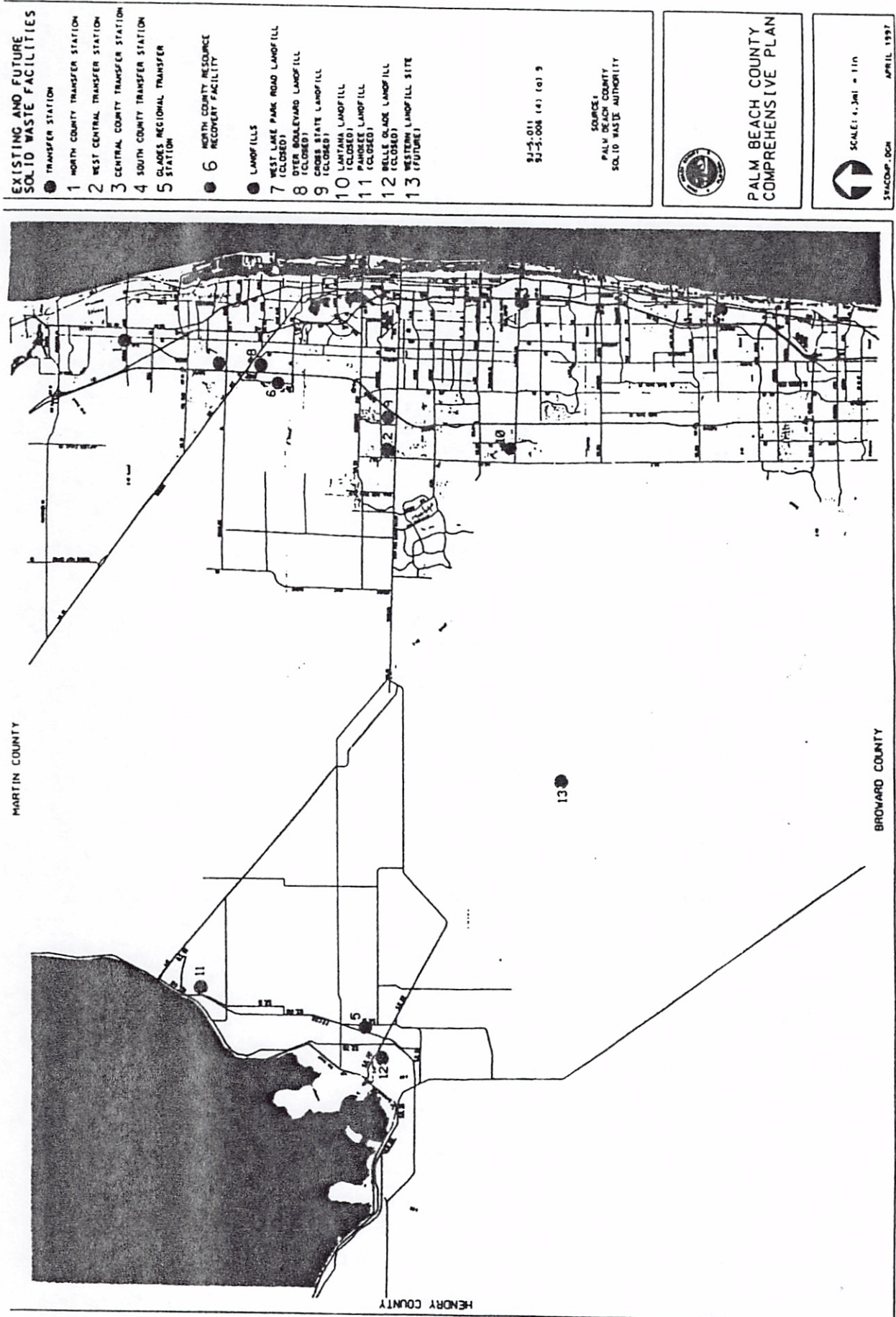
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E.9. Deleted/Moved to Support Documents Map 21 Drainage Basins and Canals:
The revised map will be titled: Drainage Basins and Surface Water Quality Monitoring Stations



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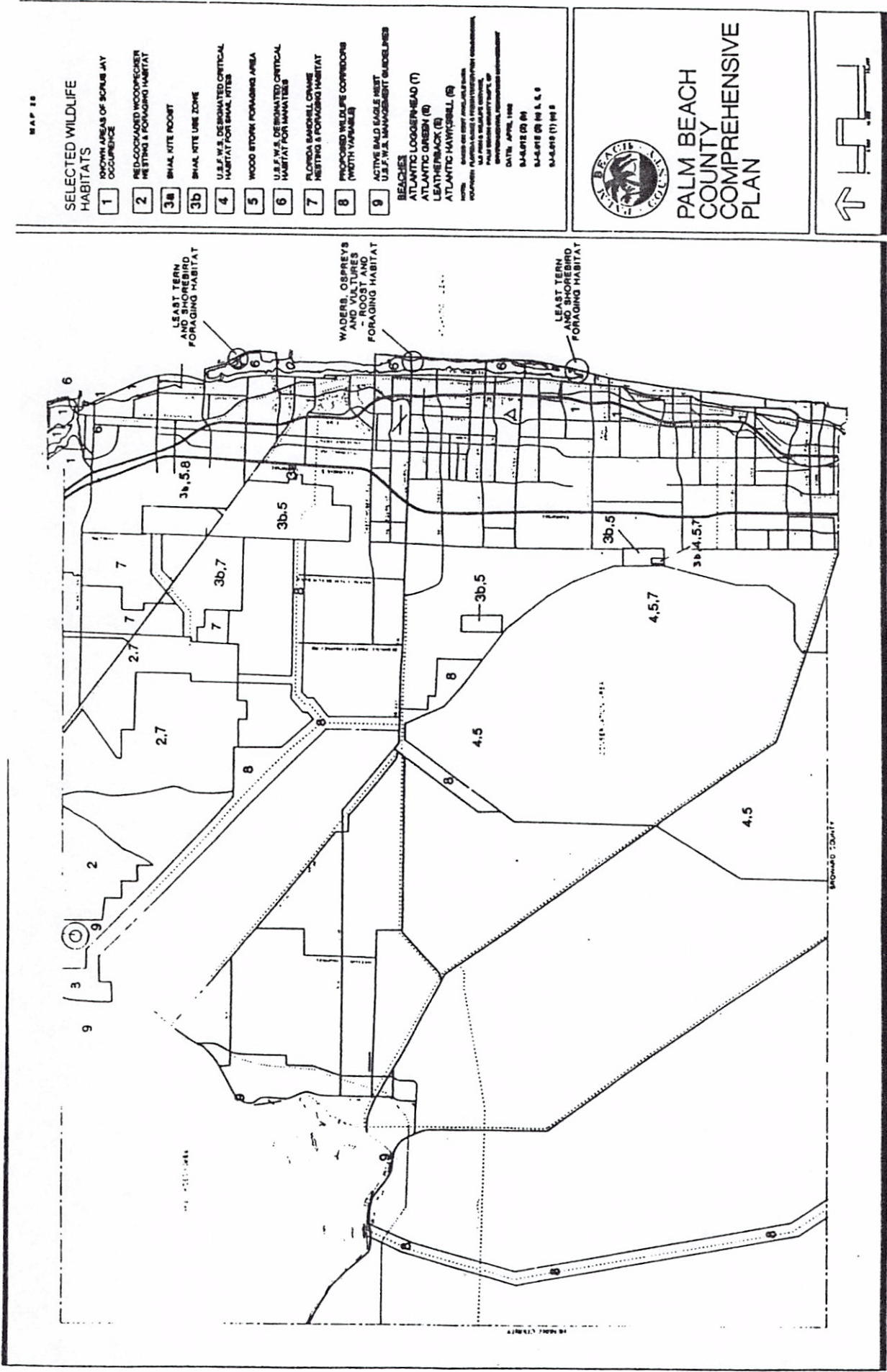
E.10. Deleted/Moved to Support Documents Map 19 Existing Solid Waste Facilities:
The revised map will remain titled: Existing Solid Waste Facilities



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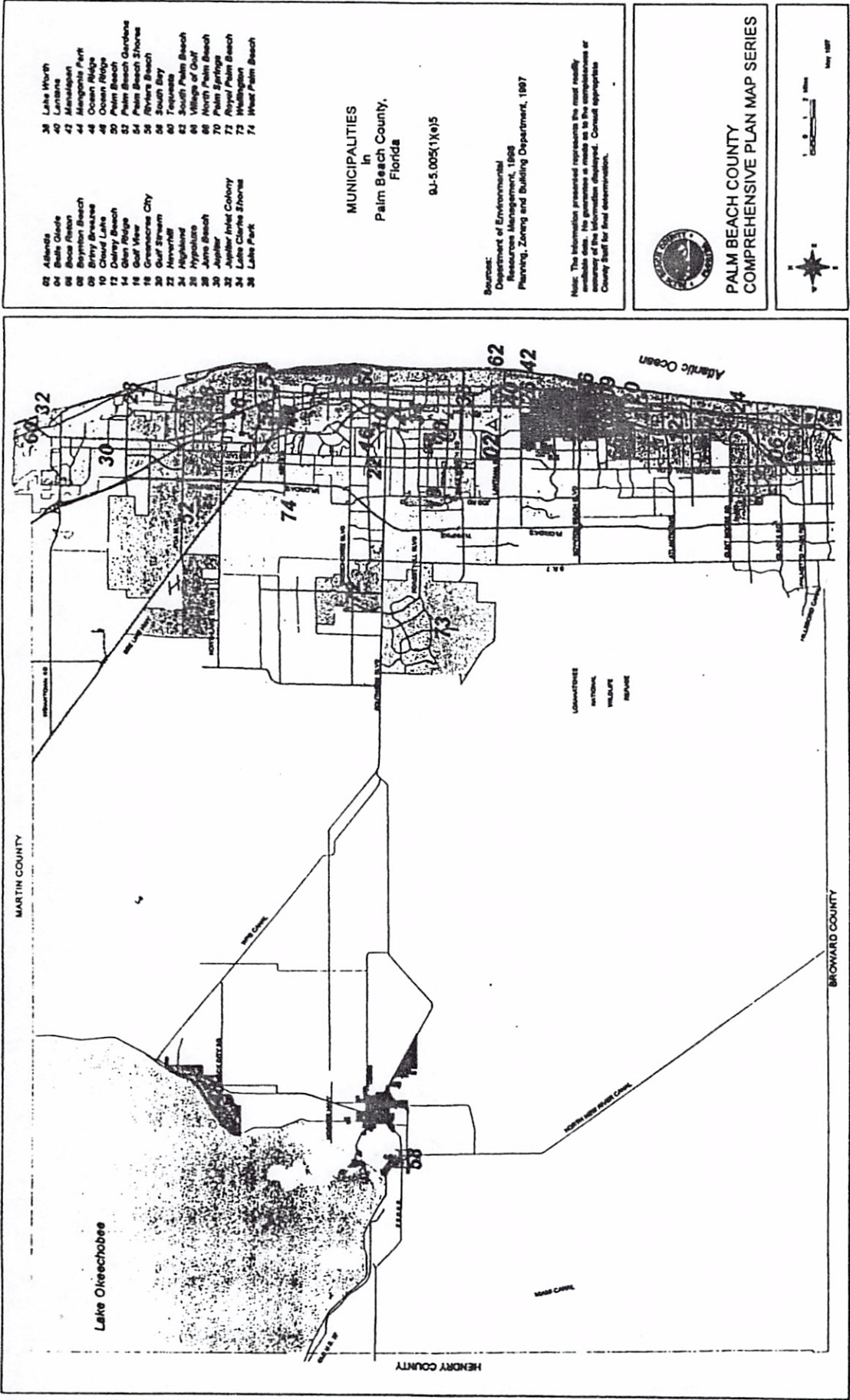
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E.11. Deleted/Moved to Support Documents Map 28 Selected Wildlife Habitats: The map will remain titled: Selected Wildlife Habitats



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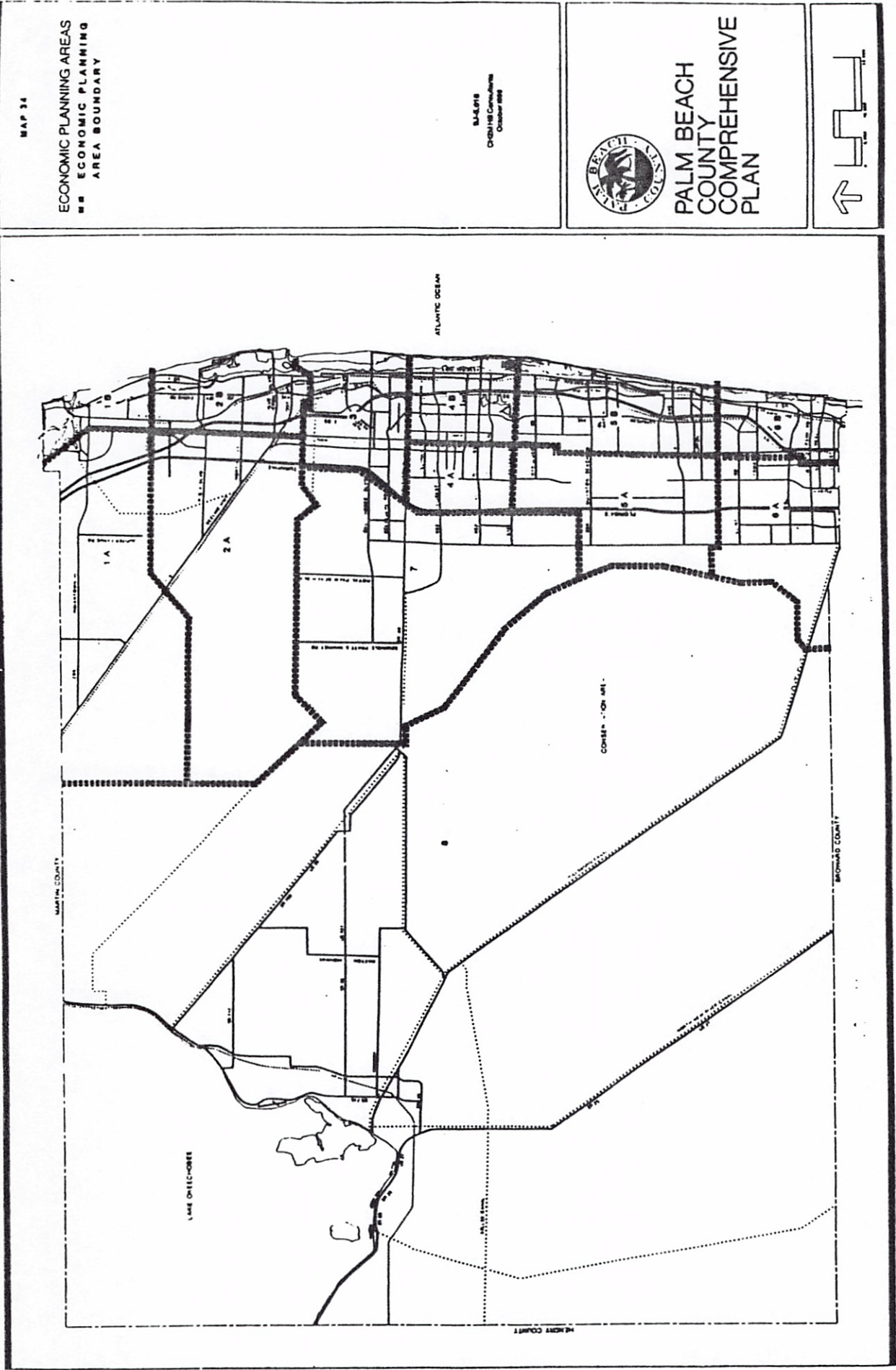
E.12. Deleted/Moved to Support Documents Map 32 Municipalities and Adjacent Counties: The map has been updated in a digital format and will be maintained as a feature for use on County maps per 9J-5.005(1)(e). This map will be a reference feature and updated as annexations or other boundary changes occur.



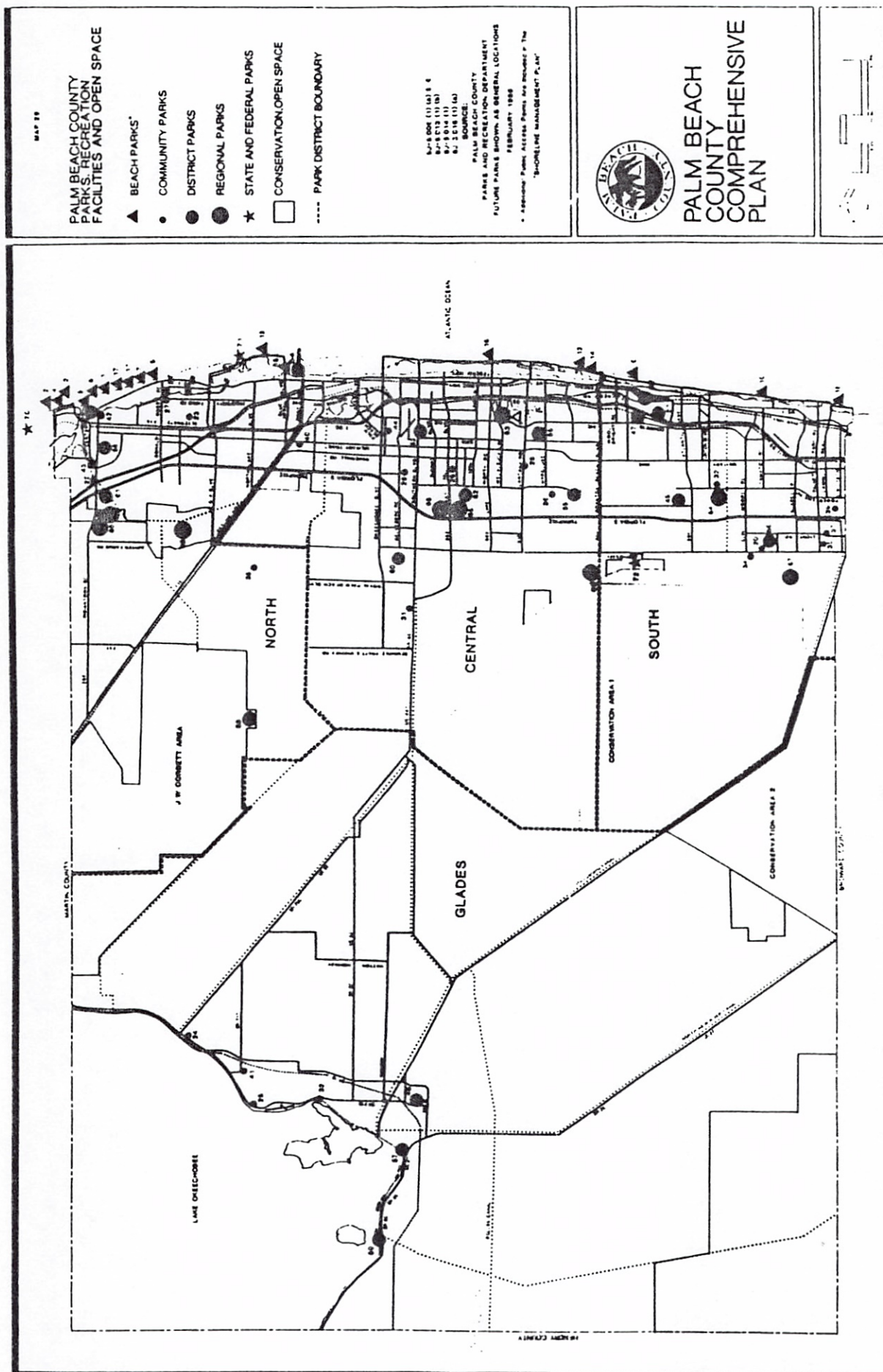
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E.13. Deleted Map 34 Economic Planning Areas: The map is being deleted.

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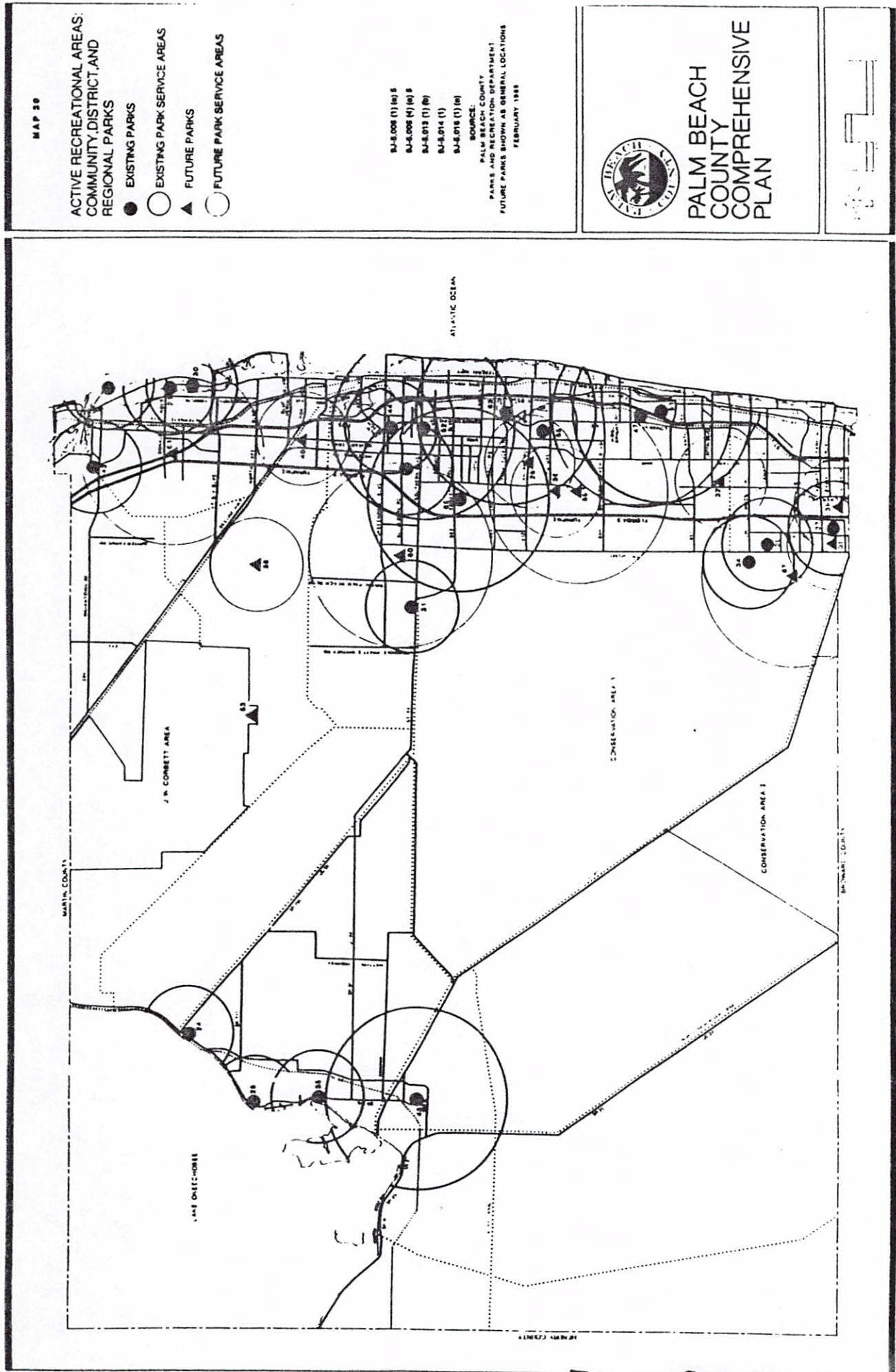


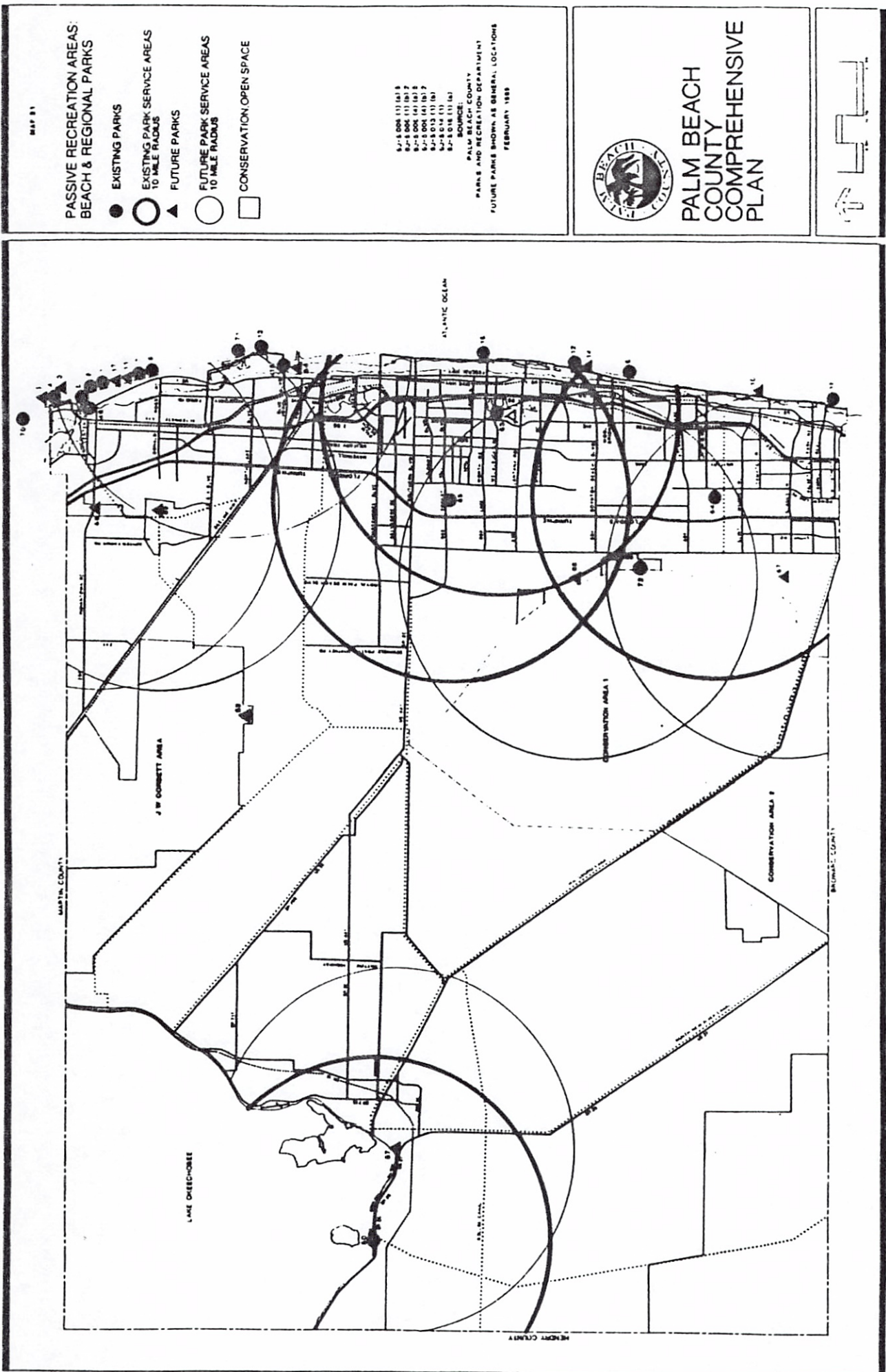
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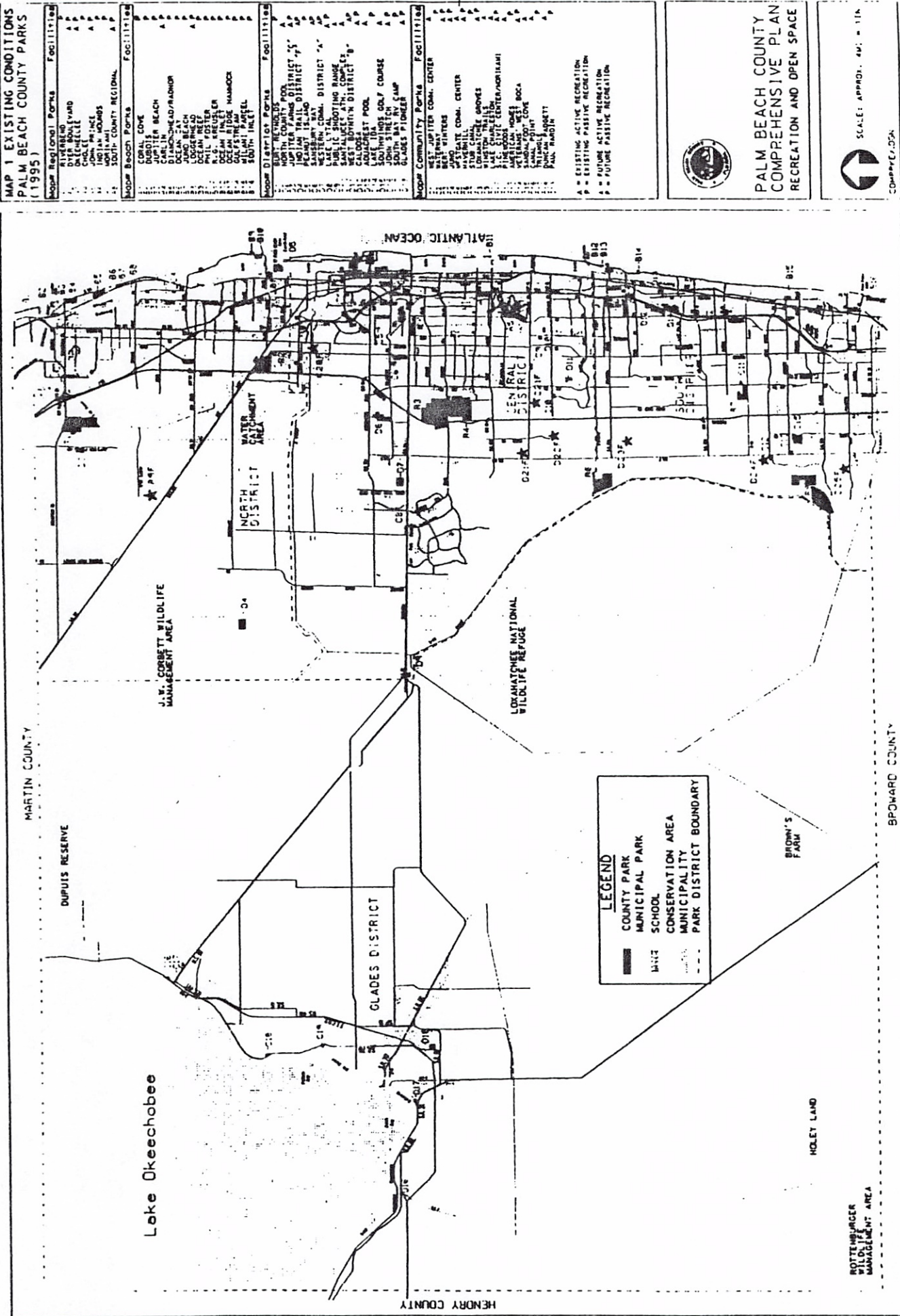
E.15. Deleted Active Recreational Areas: Community, District, and Regional Parks, Map 30: The information formally contained in this map has been updated and is being depicted in the Existing Conditions and Future Conditions Maps





ORDINANCE NO. 97-49

E.17. Added Palm Beach County Parks Existing Conditions (1995): This map consists of the existing conditions formally depicted on the following maps: Parks, Recreation Facilities and Open Space, Map 29; Active Recreational Areas: Community, District, and Regional Parks, Map 30; Passive Recreation Areas: Beach and Regional Parks, Map 31



ORDINANCE NO. 97-49

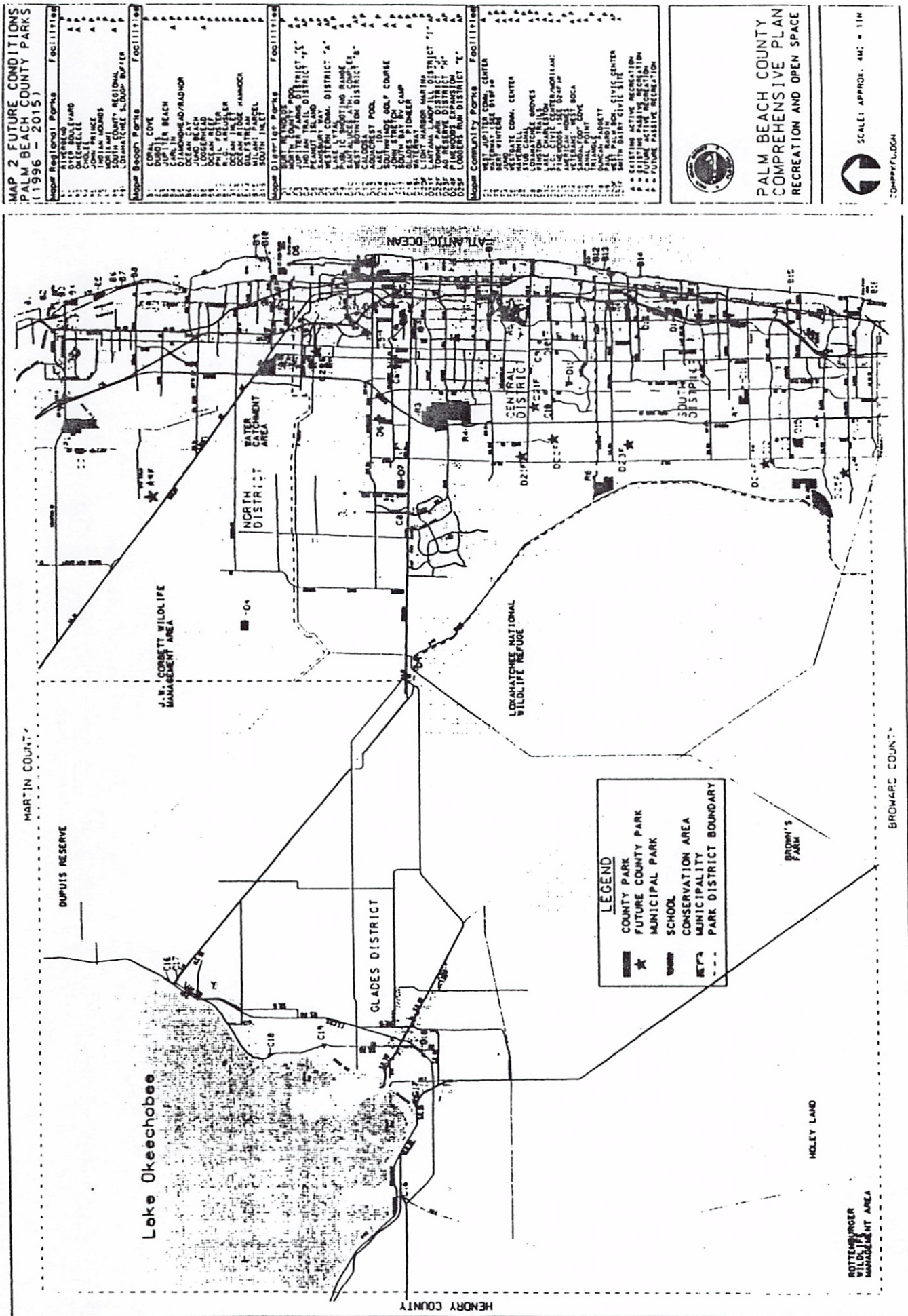
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Palm Beach County Parks Existing Conditions (1995): The following table will be provided as a legend on the reverse side of this map.

MAP 1 EXISTING CONDITIONS																									
COUNTY PARKS & RECREATION FACILITY INVENTORY																									
BY PARK DISTRICT AND CLASS AS OF 1995 EAR																									
PARK #	PARK CLASS AND NAME	EXISTING ACRES		EXISTING FACILITIES										FUTURE FACILITIES											
		Total	Designated	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	
NORTH PARK DISTRICT																									
REGIONAL PARKS																									
81	RIVERLAND & BEECH GROVE/GOLDMAN	671.00	7.00																						
ACREAGE SUB-TOTALS		671.00	7.00																						
BEACH PARKS																									
81	CORAL COVE	6.41	5.60																						
81	CORAL COVE SOUTH	21.40	0.00																						
81	CORAL COVE NORTH	3.00	2.50																						
82	DUNES	20.57	34.40																						
83	JUPITER BEACH	46.09	36.99																						
84	CARL IN	120.31	34.00																						
85	DIAMONDHEAD/ROADWOM	151.76	0.00																						
86	OCEAN CAY	13.44	0.00																						
87	JUNGLE BEACH	3.34	3.34																						
88	OCEANHEAD	17.34	17.34																						
ACREAGE SUB-TOTALS		1,104.25	0,000.00																						
DISTRICT PARKS																									
D1	BURT E. THOMAS	35.35	36.35																						
D2	NORTH COUNTY POOL	4.00	4.00																						
D3	BURNHAM TRAIL DISTRICT "B"	40.00	0.00																						
ACREAGE SUB-TOTALS		79.35	40.35																						
COMMUNITY PARKS																									
C1	WEST JUPITER COMMUNITY CENTER	0.45	7.50																						
C2	WATERWAY	31.70	1.70																						
C3	WEST WATERS	16.50	16.50																						
C4	JUNGLE	18.50	21.97																						
C5	JUPITER PARKS DISTRICT "C"	13.75	0.00																						
C6	KAHANA COLONY POOL	1.04	1.04																						
C7	FREEDMAN'S CREEK	11.00	0.00																						
ACREAGE SUB-TOTALS		108.39	39.47																						
NEIGHBORHOOD PARKS																									
N5	BAYSHORE CREEK TOWN LOT	0.92	0.92																						
ACREAGE SUB-TOTALS		0.92	0.92																						
NORTH PARK DISTRICT TOTALS		1,287.34	345.44																						

PARK #	PARK CLASS AND NAME	EXISTING ACRES		EXISTING FACILITIES										FUTURE FACILITIES											
		Total	Designated	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	
CENTRAL PARK DISTRICT																									
REGIONAL PARKS																									
83	COKEHILL & PALM & GOLF COURSE	900.00	80.00																						
84	CROWN	800.00	12.00																						
85	ACHON PARK	776.36	500.77																						
ACREAGE SUB-TOTALS		2,476.36	1,400.77																						
BEACH PARKS																									
80	OCEAN BEACH	12.42	12.42																						
81	PALM FORSTER	7.07	7.07																						
81	E. C. EVERETT	1.90	1.90																						
81	OCEAN BEACH	8.39	8.39																						
81	OCEAN BEACH HAMMOCK	0.00	0.00																						
ACREAGE SUB-TOTALS		30.78	30.78																						
DISTRICT PARKS																									
D5	PEANUT ISLAND	65.00	0.00																						
D6	SANDHILL WAY	90.00	0.00																						
D7	WESTERN COMMUNITIES DISTRICT "A"	75.00	0.00																						
D8	E. A. L. TAYLOR	30.49	60.54																						
D9	PINE H. SHOOTING RANGE	40.00	0.00																						
D10	SANTIAGO ATHLETIC COMPLEX	38.00	38.00																						
D11	WEST BOSTON DISTRICT "B"	52.00	0.00																						
ACREAGE SUB-TOTALS		497.48	94.54																						
COMMUNITY PARKS																									
C5	WESTGATE COMMUNITY CENTER	0.50	0.75																						
C6	MAYFIELD	23.77	23.77																						
C7	STUB CANAL	1.50	1.50																						
C8	OCEANVIEW GROVES	30.17	10.00																						
C9	WINDY HILL	21.00	7.00																						
C10	LAKE CHARLESTON	9.50	9.50																						
ACREAGE SUB-TOTALS		144.44	53.29																						
NEIGHBORHOOD PARKS																									
N5	FLAMINGO LAKES	2.30	0.00																						
N6	LINDA	0.91	0.00																						
N7	LAKE MELVEDESE ESTATES	7.04	7.04																						
N8	MEL BAR	1.50	1.00																						
ACREAGE SUB-TOTALS		11.75	8.04																						
CENTRAL PARK DISTRICT TOTALS		3,011.71	1,464.76																						

PARK #	PARK CLASS AND NAME	EXISTING ACRES		EXISTING FACILITIES										FUTURE FACILITIES											
		Total	Designated	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	
SOUTH PARK DISTRICT																									
REGIONAL PARKS																									
87	BAYVIEW	207.34	10.43																						
88	SOUTH COUNTY REGIONAL	267.50	251.13																						
89	BAY WINDS CIVIC SITE	30.00	0.00																						
ACREAGE SUB-TOTALS		504.84	361.56																						
BEACH PARKS																									
81	GLENVIEW	6.37	4.22																						
81	MELANIE PARK	5.51	0.00																						
81	SOUTH BEACH	11.10	10.55																						
81	JACOBSON	1.00	1.00																						
81	ATLANTIC DUNES	7.30	7.30																						
81	SOUTH BEACH	6.00	6.00																						
ACREAGE SUB-TOTALS		49.28	39.07																						
DISTRICT PARKS																									
D1	CALOOGA	64.56	63.64																						
D2	PALM CREEK POOL	2.67	2.67																						
D3	LAKE BAY	200.34	190.34																						
D4	SOUTHWINDS GOLF COURSE	150.00	150.00																						
D5	PATCH KEEP	21.00	0.00																						
ACREAGE SUB-TOTALS		538.47	556.65																						
COMMUNITY PARKS																									
C1	SOUTH COUNTY CIVIC CENTER/MORRIS	24.51	6.50																						
C2	PINEWOODS	22.50	21.50																						
C3	AMERICAN WINGS	16.52	1																						
C4	VETERANS' WEST MOCA	24.00	22.30																						
C5	SANDHILL FOOT COVE	11.83	6.83																						
C6	BOCK'S BIG SITE	80.00	0.00																						
C7	BAGAN RANCH ROAD	15.00	3.00																						
C8	LOODER																								



ORDINANCE NO. 97-49

E.18.a

Palm Beach County Parks Future Conditions (1996 - 2015): The following table will be provided as a legend on the reverse side of this map.

MAP 1 FUTURE CONDITIONS
PROPOSED COUNTY PARK & RECREATION FACILITY CAPITAL IMPROVEMENT PROJECTS
BY PARK DISTRICT AND CLASS (1996 - 2015)

PARK NAME AND CLASS		ACREAGE TO BE ADDED		SPECIAL FACILITIES										ACTIVE FACILITIES										FAMILY FACILITIES					
Map No.		1996 - 2002	2003 - 2012	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	
NORTH DISTRICT/ZONE 1																													
REGIONAL																													
R1	RYVERBEND	30	600																										
R2	OYER BOULEVARD "C"	448	330																										
R3	OKRAHATCHEE SLOUGH BUFFER	260	200																										
ACREAGE SUB-TOTALS		7,734	1130																										
BEACH																													
B1	KORAL COVE SOUTH	0	20																										
B2	ORIBONS	1	1																										
B3	JUPITER BEACH	0	0																										
B4	CARLIN	0	3																										
B5	DIAMONDHEAD/BEADHOR	0	40																										
B6	OCEAN CAY	0	14																										
B7	RUSSO BEACH - PIER	0	2																										
ACREAGE SUB-TOTALS		1,001	80																										
DISTRICT																													
D1	DURY REYNOLDS	0	12																										
D2	JUPITER FARMS DISTRICT "C"	36	36																										
D3	INDIAN TRAIL DISTRICT "B"	0	60																										
D4	WATERWAY	0	50																										
ACREAGE SUB-TOTALS		36	148																										
COMMUNITY/NEIGHBORHOOD																													
C1	WEST JUPITER COMMUNITY CENTER	0	5																										
ACREAGE SUB-TOTALS		0	5																										
ZONE 1 FACILITY TOTALS		7,770	1,263																										

PARK NAME AND CLASS		ACREAGE TO BE ADDED		SPECIAL FACILITIES										ACTIVE FACILITIES										FAMILY FACILITIES					
Map No.		1996 - 2002	2003 - 2012	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	
CENTRAL DISTRICT/ZONE 2																													
REGIONAL																													
R3	KICKHEEL EE	0	15																										
R4	KICKHEEL	0	400																										
R5	JOHN PRINCE	0	20																										
R6	INDIAN MOUNDS	120	140																										
ACREAGE SUB-TOTALS		120	575																										
BEACH																													
B12	OCEAN INLET	0	3																										
B13	OCEAN RIDGE HAMMOCK	0	12																										
ACREAGE SUB-TOTALS		0	15																										
DISTRICT																													
D5	PEANUT ISLAND	0	11																										
D6	SAUGBURY WAY	0	20																										
D7	WESTERN COMMUNITIES DISTRICT "A"	0	20																										
D8	LAKE LYAL	0	12																										
D9	PUBLIC SHOOTING RANGE	0	35																										
D11	WEST BOYNTON DISTRICT "B"	0	50																										
D12	ELM HARBOR MARINA	0	7																										
D13	ELM HARBOR MARINA	40	45																										
D14	LAKE LYAL	20	50																										
ACREAGE SUB-TOTALS		60	160																										
COMMUNITY/NEIGHBORHOOD																													
C3	WESTGATE COMMUNITY CENTER	0	4																										
C4	HAVERHILL	0	1																										
C5	WINDY TRAILS	0	22																										
C6	WEST PALM BEACH CIVIC CENTER	15	15																										
C7	SMITH DAIRY CIVIC SITE	10	10																										
C8	ORORA	0	1																										
C9	LAKE WORTH ROAD CORRIDOR	5	5																										
ACREAGE SUB-TOTALS		30	50																										
ZONE 2 FACILITY TOTALS		190	790																										

PARK NAME AND CLASS		ACREAGE TO BE ADDED		SPECIAL FACILITIES										ACTIVE FACILITIES										FAMILY FACILITIES					
Map No.		1996 - 2002	2003 - 2012	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	
SOUTH DISTRICT/ZONE 3																													
REGIONAL																													
R7	MORIKAMI	0	80																										
R8	SOUTH COUNTY REGIONAL	5	300																										
ACREAGE SUB-TOTALS		5	380																										
BEACH																													
B14	COLEFSTREAM	2	3																										
B15	WILSON PROPERTY	0	5																										
ACREAGE SUB-TOTALS		2	8																										
DISTRICT																													
D12	CALOOSA	0	5																										
D14	LAKE IDA	0	10																										
D13	LAG RESERVE DISTRICT "H"	40	50																										
D14	PINEWOODS EXPANSION	12	12																										
D15	LOGGERS RUN DISTRICT "B"	38	38																										
ACREAGE SUB-TOTALS		90	107																										
COMMUNITY/NEIGHBORHOOD																													
C11	S. COUNTY CIVIC/MORIKAMI	0	15																										
C12	VETERANS WEST BOCA	0	10																										
ACREAGE SUB-TOTALS		0	25																										
ZONE 3 FACILITY TOTALS		95	515																										

PARK NAME AND CLASS		ACREAGE TO BE ADDED		SPECIAL FACILITIES										ACTIVE FACILITIES										FAMILY FACILITIES					
Map No.		1996 - 2002	2003 - 2012	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	
GLADES DISTRICT/ZONE 4																													
DISTRICT																													
D17	SOUTH BAY B.V.	0	25																										
D18	PIONEER	0	10																										
ACREAGE SUB-TOTALS		0	35																										
ZONE 4 FACILITY TOTALS		0	35																										

PARK NAME AND CLASS		ACREAGE TO BE ADDED		SPECIAL FACILITIES										ACTIVE FACILITIES										FAMILY FACILITIES					
Map No.		1996 - 2002	2003 - 2012	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	Swim	Boat	10 Min	20 Min	30 Min	
ZONE 1 - 4 SUMMARY																													
REGIONAL		803	2285																										
BEACH		3	103																										
DISTRICT		188	652																										
COMMUNITY/NEIGHBORHOOD		30	80																										
ZONE 1 - 4 FACILITY TOTALS		1,024	1,918																										